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In Section 3 you will find everything covered by a complete index on Pages 1087 and 1088.

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SECTION 1

Automobiles, Commercial Vehicles, Tractors, Motorcycles, Motor Boats and Aircraft.

BRIEF specifications of stock models. Names and addresses of manufacturers.

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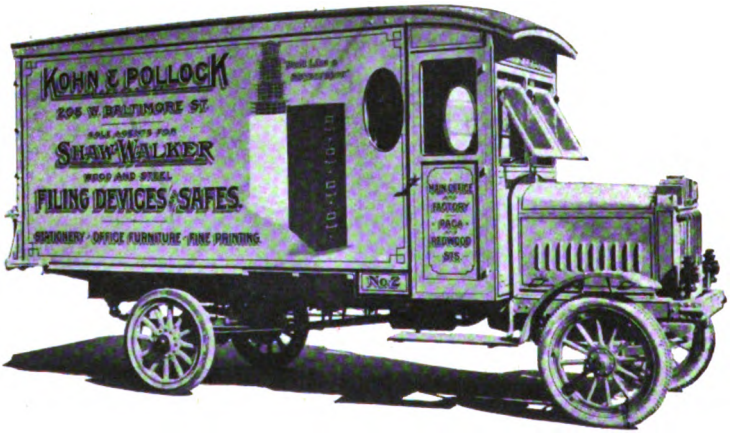
ALL-AMERICAN TRUCKS



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"After eight months of daily operation (except Sundays and holidays), we are pleased to report the truck has stood up wonderfully; and it has exceeded our expectations, in taking care of quick deliveries, on account of its speed.

"It is most economical in fuel consumption; and the maintenance to date has cost nothing, except for gas, lubricating oils, and greases, as no repairs have been required to any part of the truck.

"We cheerfully recommend the "All-American" to be and do all that is claimed for it by its manufacturers."—Kohn & Pollock, Inc., Baltimore, Md.

If you're interested—Ask us for more All-American Facts.

Let us tell you in detail about All-American construction. Let us show you why owners everywhere are boosters for the All-American Truck—the biggest, best truck value on the market—The Ton-Mile Champion.

Write today for Booklet R, and get the story of All-American Supremacy.

ALL-AMERICAN TRUCK CO., 6503 W. Grand Ave., Chicago, Ill.

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SECTION I

Automobiles, Commercial Vehicles, Tractors, Motorcycles, Motor Boats and Aircraft

Gasoline Automobiles

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel-base	Size of Tires
Ace See page 17	Apex Motor Corp., Ypsilanti, Mich. Touring $2260 Roadster 2260 Sedan .... Coupe	6-3¼x5	Own	25.3	116	32x4
Allen 43	Allen Motor Co., Columbus, Ohio Chassis $1260 Roadster 1595 Touring 1595 Aircraft 2045 Four-Door Sedan 2395	4-3½x5	Own	19.6	110	32x4
	American & British Mfg. Corp.—See Porter.					
American C 6-60 See page 29	American Motors Corp., Plainfield, N. J. Five-Passenger Touring $2395 Four-Passenger Sport 2595 Seven-Passenger Touring 2475 Sedan 3495 Two-Passenger Roadster 2395 Coupe 3295	6-3¼x5	Herschell-Spill	25.3	127	32x4
Anderson 30 A. C. D. G.	Anderson Motor Co., Rock Hill, S. C. Five-Passenger Touring $2145 Five-Passenger Convertible Roadster 2195 Seven-Passenger Touring 2195 Coupe 3200 Sport 2175 Five-Passenger Sedan 3200	6-3¼x4½	Continental	25.3	120	33x4
Apperson 8-20 See Page 25	Apperson Bros. Automobile Co., Kokomo, Ind. Seven-Passenger Standard $3500 Four-Passenger Standard 3500 Seven-Passenger Standard Sedan 4500 Four-Passenger Standard Sedanette 4500 Seven-Passenger Anniversary 4250 Four-Passenger Anniversary 4250 Four-Passenger Anniversary Sedanette 6000 Seven-Passenger Anniversary Sedan 6000	8-3¼x5	Own	33.8	130	34x4½
	Apex Motor Corp.—See Ace.					
Auburn Beauty 6-39 H. K. R.	Auburn Automobile Co., Auburn, Ind. Five-Passenger Touring $1895 Four-Passenger Touring 1895 Two-Passenger Roadster 1945 Five-Passenger Sedan 2995 Four-Passenger Coupe 2995	6-3¼x4½	Continental	25.3	120	33x4
Austin	Austin Automobile Co., 114-18 Division Ave., S. E., Grand Rapids, Mich. Touring $4250 Roadster 4250 Sedan 5500 Limousine 5750	12-2⅞x5	Weidely	39.6	143	34x4½
	Barley Motor Car Co.—See Roamer.					
	Barthelemew Co.—See Glide.					

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Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P	Wheel-base	Size of Tires
Beggs 21T.R.	Beggs Motor Car Co., Michigan Ave. & Guinotte Ave., Kansas City, Mo. **Five-Passenger Touring** ..... $2000 **Four-Passenger Roadster** 1685	6-3¼x4½	Continental	25.3	120	33x4
Bell 18 See page 33	**Bell Motor Car Co., York, Pa.** **Five-Passenger Touring** $1495	4-3½x5	Herschell-Spill	19.6	114	31x4
Biddle 1-5	Biddle Motor Car Co., 142nd St. & Fifth Ave., New York, N. Y. Two-Passenger Ormand ..... $3750 Two-Passenger Roadster King ..... 3750 Four-Passenger Touring Rosemont ..... 3750 Four-Passenger Roadster Brewster ..... 3750 Six-Passenger Touring ..... 3750 Seven-Passenger Sedan 4600	4-3¼x5⅛	Buda	22.5	121 125	32x4 32x4
Birch 30	**Birch Motor Cars, 81 E. Madison St., Chicago, Ill.** Five-Passenger Touring ..... $1295 Two-Passenger Roadster 1295	4-3⅛x4½	Le Roi	15.6	108	30x3½
Birch 55	**Birch Motor Cars, 81 E. Madison St., Chicago, Ill.** Five-Passenger Touring ..... $1895 Seven-Passenger Touring ..... 2695 Four-Passenger Sport ..... 1945 Three-Passenger Roadster 1895	6-3¼x5	Herschell-Spill	25.3	117	33x4
Birch 45	**Birch Motor Cars, 81 E. Madison St., Chicago, Ill.** Five-Passenger Touring ..... $1595 Three-Passenger Roadster ..... 1595 Four-Passenger Sport ..... 1645 Seven-Passenger Sedan 2395	4-3½x5	Herschell-Spill	19.6	117	33x4
Bour-Davis 21, F.S.R.	**Louisiana Motor Car Co., Shreveport, La.** Seven-Passenger Touring ..... $2875 Five-Passsenger Touring ..... 2825 Two-Passenger Roadster 2875	6-3½x5¼	Continental	29.4	125	33x4½
Brewster Knight 91	Brewster & Co., Queensboro Bridge Plaza, Long Island City, N. Y. **Runabout** ..... $ 7900 Limousine ..... 10600 Brougham ..... 10500 Landaulet ..... 10700 Enclosed Drive 10500	4-4 x5½	Own	25.6	125	34x4½
Briscoe 34	Briscoe Motor Corp., Jackson, Mich. Roadster ..... $1285 **Touring** ..... 1285 Sedan 1885	4-3⅜x5	Own	18.2	109	31x4
Brook	Spacke Machine & Tool Co., Indianapolis, Ind. Two Passenger Runabout $395	2-3½x3⅝	Own	9.8	90	28x3
Buick K-6-44-45-46-47 49-50	Buick Motor Co., Hamilton Ave., Flint, Mich. Three-Passenger Roadster ..... $1495 Five-Passenger Touring ..... 1495 Four-Passenger Touring Coupe ..... 2085 Five-Passenger Touring Sedan ..... 2255 Seven-Passenger Touring ..... 1785 Seven-Passenger Sedan 2695	6-3⅜x4½	Own	27.3	118 124	33x4 34x4½
	Bull-Tractor Madison Motors Corp.—See Madison.					
Cadillac 59	Cadillac Motor Car Co., 1343 Cass Ave., Detroit, Mich. **Roadster** ..... $3790 **Phaeton** ..... 3790 Victoria ..... 4540 **Sedan** ..... 4950 **Coupe** ..... **Town Brougham** ..... 5290 Limousine ..... 5290 Seven-Passenger Touring ..... 3940 **Imperial Limousine** ..... 5390 Suburban 5190	8-3⅛x5⅛	Own	31.2	125 132	34x4½ 35x5

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Something NEW under the HOOD

The Greatest Advancement Made in Internal Combustion Engine Design in Recent Years

Passe! "Indications are that the streamline, straight side body is passing out." So stated a writer in a recent issue of a well-known motor journal.

What more fitting and proper than a car, bearing the name ACE and powered by a motor incorporating the greatest forward step in engine design, should set the style and fashion in new body designs?

In the mad race for quantity production, style and appearance were secondary considerations. For proof, observe the marked degree of sameness common to most cars. Style, always a big factor in the choice of a motor car, now influences to a greater degree than ever the selection of this or that car.

NEW! The ACE in four, new, handsome body styles establishes a new standard in motor car fashions. There is an air of smartness and originality in their makeup that is as welcome as it is refreshing. Each of these four bodies portrays true grace and beauty in every line and curve and offers a pleasing change in appearance to the man and woman who have grown tired of a style which has lost its attraction.

Compatible with its distinction and good taste in body improvement are mechanical features which lift the ACE from the ranks of the commonplace and identify it as a truly great and extraordinary motor vehicle.

APEX MOTOR CORPORATION

YPSILANTI, [Suburb of Detroit] MICHIGAN

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Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel-base	Size of Tires
Case	Case, T. M., Co., J. I., State & Douglas Sts., Racine, Wis. Seven-Passenger Touring $2650 Four-Passenger Sport 2650 Four-Passenger Coupe 3400 Seven-Passenger Sedan 3750	6-3¼x5¼	Continental	29.4	126	34x4½
Chalmers 35 C, 35 B See page 33	Maxwell Motor Sales Corp., Detroit, Mich. Five-Passenger $1795 Roadster 1795 Four-Passenger Coupe 2595 Sedan 2745 Seven-Passenger Touring 1945	6-3¼x4½	Own	25.4	117 122	32x4 33x4½
Champion Special 1920	Champion Motors Corp., Harrison Bldg., Philadelphia, Pa. Touring $1595	4-3 ½x5	Herschell-Spill	19.8	118	32x4
Champion	Champion Motors Corp., Harrison Bldg., Philadelphia, Pa. Five-Passenger Tourist $1350	4-3½x5	Lycoming	19.6	116	32x3½
Chandler 1920 New Series See page 33	Chandler Motor Car Co., Cleveland, Ohio Touring $1895 Two-Passenger Roadster 1890 Chummy Roadster 1895 Dispatch 1975 Coupe 2895 Seven-Passenger Sedan 2995 Seven-Passenger Limousine 3395	6-3½x5	Own	29.4	123	33x4
Chevrolet 490	Chevrolet Motor Co., 224 W. 57th St., New York, N. Y. Roadster $ 795 Touring 820 Coupe 1325 Sedan 1375	4-3 11/16x4	Own	21.7	102	30x3½
Chevrolet FB	Chevrolet Motor Co., 224 W. 57th St., New York, N. Y. Roadster $1320 Touring 1345 Sedan 2075 Coupe 2075	4-3 11/16x5¼	Own	21.7	110	32x3½
Chrysler See page 769	Chrysler Motor Co., Elizabeth, N. J.					
Cleveland 40 See page 31	Cleveland Automobile Co., Cleveland, Ohio Five-Passenger Touring $1435 Three-Passenger Roadster 1435 Five-Passenger Sedan 2445 Four-Passenger Coupe 2345	6-3x4½	Own	21.6	112	32x4
Cole Aero-Eight See page 29	Cole Motor Car Co., Indianapolis, Ind. Tourster .... Roadster .... Sportster .... Sportsedan .... Sportesine .... Sportcoupe .... Touresine .... Toursedan	8-3½x4½	Northway	39.2	127	33x5
Colonial See Page 31	Colonial Motors Corp., 1106 Boylston St., Boston, Mass. Six-Passenger Touring $2750 Four-Passenger Sport 2750 Two-Passenger Roadster 2750 Six-Passenger Sedan 3850 Four-Passenger Sedanette 3850	6-3½x5¼	Beaver	29.4	130	33x4½
Colonial	Shaw Livery Co., Walden W., 5801 W. Dickens Ave., Chicago, Ill. Roadster $5000 Four-Passenger 5000 Seven-Passenger 5000	4-4¼x6	Duesenberg	38.9	136	33x5

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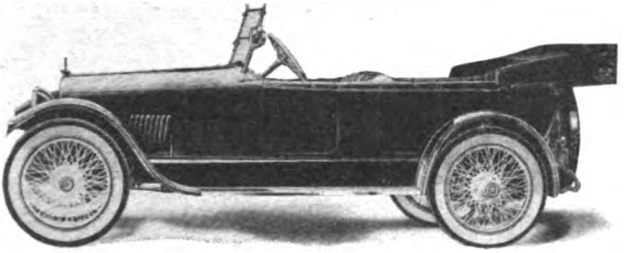
"THE AMERICAN BEAUTY CAR"

BUILT IN THREE MODELS



2 Pass. Roadster

5 Pass. Touring

Sedan

PAN-AMERICAN MOTORS CORPORATION, *Decatur, Ill.*

Two Divisions
Two Factories
Two Products

The trade marks, "Baker" identifying Industrial Trucks and "Raulang" identifying Automobile Bodies, assure the purchaser of value received in products which are national leaders in their fields.

The BAKER R & L COMPANY

CLEVELAND

Formerly Builders of Baker Electric, Rauch & Lang Electric and Owen Magnetic Automobiles

COMET SIX

A Car of Unusual Power

Live Dealers wire or write your territory may be open

COMET AUTOMOBILE CO. 825-69 Garfield Ave., Decatur, Ill.

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Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel-base	Size of Tires
Columbia 6 See page 21	Columbia Motors Co., Detroit, Mich. Five-Passenger Touring $1795 Four-Passenger Sport 1945 Two-Passenger Roadster 1945 Five-Passenger Sedan 2895 Four-Passenger Coupe 2895	6-3¼x4¼	Continental	25.6	115	32x4
Comet C 53	Comet Automobile Co., Garfield Avenue & I. C. R. R., Decatur, Ill. Five-Passenger Touring $2350	6-3½x5¼	Continental	29.4	125	33x4
Commonwealth 42	Commonwealth Motors Co., 326 W. Madison St., Chicago, Ill. Five-Passenger Touring $1595	4-3½x5	Herschell-Spill	19.6	117	32x4
Commonwealth 45	Commonwealth Motors Co., 326 W. Madison St., Chicago, Ill. Five-Passenger Touring (1921) $1595 Four-Passenger Sportster 1785 Five-Passenger Sedan 2465	4-3½x4	Herschell-Spill	19.6	116	32x4
	Cortland Cart & Carriage Co.—See Hatfield.					
Crawford 19-6-40	Crawford Automobile Co., Surrey & Summit Aves., Hagerstown, Md. Touring $3000 Sport 3000 Roadster 3000 Sedan 4500	6-3½x5¼	Continental	39.4	122½	32x4
Crow-Elkhart L-65-63-64	Crow-Elkhart Motor Corp., 1100 N. Main St., Elkhart, Ind. Roadster $1295 Touring 1295 Four-Passenger Sport 1345	4-3½x5	Lycoming	19.6	117	32x3½
Crow-Elkhart S-63-64-65-67	Crow-Elkhart Motor Corp., 1100 N. Main St., Elkhart, Ind. Touring $1545 Roadster 1545 Sport 1595 Sedan 2295	6-3¼x5	Herschell-Spill	25.3	117	33x4
Cunningham V37 50-79-56-57-58	Cunningham, Son & Co., James, 13 Canal St., Rochester, N. Y. Two-Passenger Roadster .... Four-Passenger Roadster .... Six Passenger Touring .... Seven-Passenger Touring .... Six-Passenger Inside Drive Limousine .... Six-Passenger Town Car .... Six-Passenger Landaulet	8-3¾x5	Own	45.0	132	35x5
Daniels D-19	Daniels Motor Car Co., Third St. & Lebanon Valley R. R., Reading, Pa. Brougham $6750 Landau 7250 Sedan 6800 Four Passenger C. C. Sedan 6950 Suburban 7025 Limousine 6750 Cabriolet 6500 Coupe 6250 Open Cars 5350 Landaulet Suburban 7600	8-3½x5¼	Herschell-Spill.	39.2	132¼	{32x4½ / 34x4½}
Davis 51-52-53-54-55 56-57	Davis Motor Car Co., Geo. W., 1200 N. E. St., Richmond, Ind. Five-Passenger Touring $2085 Four-Passenger Sport 2125 Four-Passenger Sport (Special) 2250 Five-Passenger Sedan 3085 Four-Passenger Coupe 3085 Three-Passenger Roadster 2125 Three-Passenger Roadster (Special) 2250	6-3¼x4½	Continental	25.3	120	33x4

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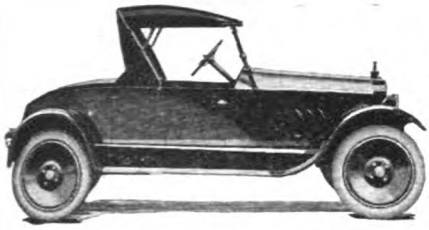

Columbia Six

Roadster

Gem of the Highway

SIX MODELS—A Five-Passenger Touring Car; Four-Passenger Sport Model (five wire wheels); Four-Passenger Special Sport (five Disteel wheels); Two-Passenger Roadster (five Disteel wheels); Four-Passenger Coupe (five wire wheels), and a Five-Passenger Touring Sedan (five wire wheels), conceived by master designers and founded on units of international reputation.

Columbia Motors Company
DETROIT
U. S. A.

REO

The Complete Quality Line

Reo Six Cylinder Cars

Touring, Roadster, Sedan and Coupe

The Reo Speed Wagon

With Bodies Fitted for Every Line of Business

We have room for a few more live dealers

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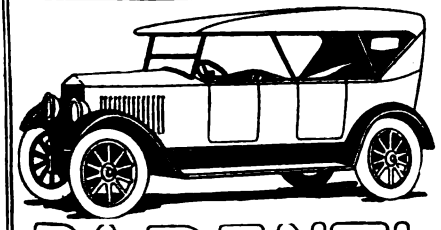
Lansing, Mich.



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IT IS VITALLY DIFFERENT

These features make the Parenti Car the long looked for ECONOMY CAR.

LIGHT WEIGHT

Body constructed of plywood—luxurious five-passenger car of 123-inch wheel base weighs only 1500 lbs.

UNSPRUNG WEIGHT ELIMINATED

No heavy steel frame or axles—differential gears and housing carried above springs.

MOTOR

Own 3 by 4½, six-cylinder unit power plant—35 H. P. The Parenti will give 30 to 40 miles per gallon of gasoline and 20 thousand to 25 thousand miles per set of tires.

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Triplex Springs

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"Sleeve-Valve, The Motor That Always Runs"

Willys-Overland, Inc.
Toledo, Ohio
Sedans, Coupes, Touring Cars and Roadsters

Willys-Overland Limited
Toronto, Canada

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Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel-base	Size of Tires
Dispatch G	Dispatch Motor Car Co., 1200 14th Ave., S. E., Minneapolis, Minn.	4-3¾x5	Wisconsin	22.5	120	34x4
	Two-Passenger Roadster $1200					
	Four-Passenger Roadster 1250					
	Seven-Passenger Touring 1250					
	Coupe 1525					
	Sedan 1575					
Dixie-Flyer H.S. 70	Kentucky Wagon Mfg. Co., Third & K Sts., Louisville, Ky.	4-3½x5	Herschell-Spill	19.6	112	32x4
	Touring $1895					
	Roadster 1895					
	Sedan 2570					
	Coupe 2570					
Dodge [redacted]	Dodge Bros., 7904 Jos. Campau Avenue, Detroit, Mich.	4-3⅞x4½	Own	24.0	114	32x3½
	Touring $1285					
	Roadster 1285					
	Sedan 2150					
	Coupe 1900					
Dorris-6-60	Dorris Motor Car Co., 4100 Laclede Ave., St. Louis, Mo.	6-4x5	Own	38.4	132	33x5
	Seven-Passenger Touring $4785					
	Four-Passenger Tourist 4785					
	Four-Passenger Coupe 5500					
	Four-Passenger Sedan 6000					
Dort 15-10-15S-10C See page 25	Dort Motor Car Co., Flint, Mich.	4-3½x5	Lycoming	19.6	105½	30x3½
	Touring $1065					
	Roadster 1065	.....	.....	.....	.....	31x4
	Sedan 1765					
	Coupe 1765					
DuPont	DuPont Motors, Commerce St. Wilmington, Del.	4-3 11/16x5½	Own	34.6	124	[illegible]
	Four-Passenger Touring $3400					
	Five-Passenger Suburban Sedan 4900					
	Five-Passenger Touring Sedan 4900	.....	.....	.....	.....	[illegible]
	Two-Passenger Roadster 3400					
Douglas G	Douglas Motor Corp., 30th & Sprague Sts., Omaha, Neb.	8-3¼x5	Herschell-Spill.	30.8	122	[illegible]
	Five-Passenger $2000					
	Four-Passenger Speedster 2250					
	Seven-Passenger 2200					
Elcar 4 D.H.K.G	Elkhart Carriage & Motor Car Co., Beardsley Ave., Elkhart, Ind.	4-3½x5	Lycoming	19.6	116	[illegible]
	Touring $1495					
	Sportster 1495					
	Coupe 2095					
	Sedan 2195					
Elcar 6 D.H.K.G.	Elkhart Carriage & Motor Car Co., Beardsley Ave., Elkhart, Ind.	6-3¼x4½	Continental	26.3	116	[illegible]
	Touring $1795					
	Sportster 1795					
	Coupe 2395					
	Sedan 2495					
Elgin K See page 31	Elgin Motor Car Corp., Argo, Ill.	8-3½x4¼	Falls	23.4	118	[illegible]
	Touring $1775					
	Sedan 2685					
	Four-Passenger Scout 1895					
	Coupe 2685					
Essex A-6-A	Essex Motors, 2901 E. Jefferson Ave., Detroit, Mich.	4-3⅝x5	Own	18.2	108½	[illegible]
	Five-Passenger Touring $1595					
	Two-Passenger Roadster 1595					
	Five-Passenger Sedan 2450					
	Two-Passenger Cabriolet 2100					
Ferris 6	Ohio Motor Vehicle Co., Oakview & Nottingham Rds., Cleveland, Ohio	6-3½x5¼	Continental	29.4	120	[illegible]
	Touring $3350					
	Sport Touring 3500					
	Roadster 3350					
	Four-Passenger Sedan 4875					

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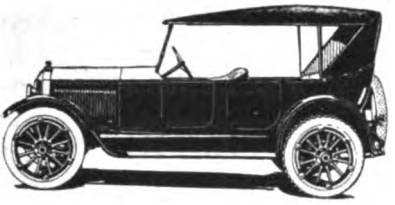
At Last—
The Ideal Motor Car!

IN THE new Rauch & Lang Electric we have, at last, the ideal automobile. It is the car that you have dreamed and talked so much about. The result of years of advanced engineering thought and development. The most practical, reliable, serviceable and economical car for the average requirements.

RAUCH & LANG, INC.
Chicopee Falls, Mass.



The Manufacturers of Scripps-Booth Motor Cars, with the advantages of the large organization of which they are a division, General Motors Corporation, do not have in mind either quantity madness or quality neglect, but are now building and intend to continue to build a car that will command the respect of the dealers and owners in this country.

Scripps-Booth Corporation
Detroit, Mich.

Maibohm

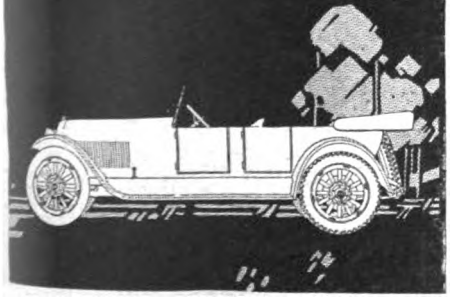
— the lightest good six made.

1695 f. o. b. Factory

Maibohm

Sandusky, Ohio

Makers of Fine Vehicles since 1888



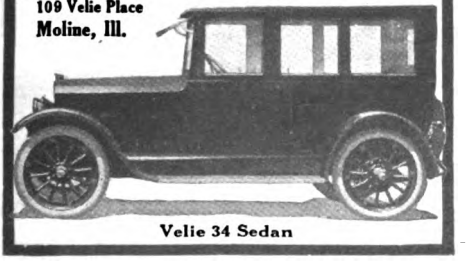
Velie

8 Quality Models Open and Closed

The Velie dealer's opportunity this year is exceptional. The Velie line commands a fast-selling market wherever it is presented. The Velie reputation for quality building is a great business asset. *The Velie prices are guaranteed by Factory Bond.*

Inquire about your territory. If it is not closed we have an interesting proposition to offer.

Velie Motors Corporation
109 Velie Place
Moline, Ill.



Velie 34 Sedan

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Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufact

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel-base
Ford T	Ford Motor Co., of Delaware (Highland Park), Detroit, Mich. Touring $510 Runabout 465 Coupe 745 Sedan 795	4-3¾x4	Own	22.5	100
Franklin 9B	Franklin Mfg. Co., H. H., 101 W. Marcellus St. Syracuse, N. Y. Touring $2600 Two-Passenger Runabout 2400 Four-Passenger Roadster 2500 Brougham 3500 Sedan 3600 Two-Passenger Runabout (Convertible) 2750	6-3¼x4	Own	25.3	115
Friend 4	Friend Motors Corp., Pontiac, Mich. Three-Passenger Roadster $1585 Five-Passenger Touring 1585 Three-Passenger Coupe 2485 Five-Passenger Sedan 2585	4-3¼x4½	Own	16.9	112
Gardner G	Gardner Motor Co., Main & Rutger Sts., St. Louis, Mo. Five-Passenger Touring $1195 Three-Passenger Roadster 1195 Sedan 2145	4-3½x5	Lycoming	19.6	112
Geronimo 6-A-45	Geronimo Motor Co., Enid, Okla. Five-Passenger $1550 Roadster 1550 Chummy Roadster 1550 Seven-Passenger 1600	6-3⅛x5	Rutenber	23.4	122
Glide 6-40	Bartholomew Co., Prospect Heights, Peoria, Ill	6-3⅛x5	Rutenber	23.4	119
Grant H-X	Grant Motor Car Corp., Coit. Rd. & Kirby Ave., Cleveland, Ohio Five-Passenger Touring $1550 Two-Passenger Roadster 1550 Five-Passenger Sedan 2450 Four-Passenger Coupe 2450	6-3 1/16x4½	Own	23.4	116
H. C. S.	H. C. S Motor Car Co., 14th & Capitol Ave., Indianapolis, Ind. Four-Passenger Touring $2975 Two-Passenger Roadster 2925	4-3⅝x5½	Weidely	21.0	120
Halladay 21-22-23-24	Halladay Motors Corp., Newark, Ohio Two-Passenger Touring $1835 Five-Passenger Touring 1885 Four-Passenger Coupe 2385 Five-Passenger Sedan 2485	6-3⅛x5	Rutenber	23.4	116 122
Handley-Knight See page 27	Handley-Knight Co., Kalamazoo, Mich. Seven-Passenger Touring $2985 Seven-Passenger Sedan	4-4⅛x4½	Own	27.2	125
Hanson Six 54-60	Hanson Motor Co., Ashby & Lee Sts., Atlanta, Ga. Five-Passenger Touring $2335 Four-Passenger Sport 2465 Two-Passenger 2365 Sedan 3165	6-3¼x4½	Continental	25.3	121
	Hare's Motors.—See Locomobile & Mercer.				
Harroun AA 2	Harroun Motors Corp., Wayne, Mich. Five-Passenger Touring	4-3¼x5¼	Own	16.9	106
Hatfield C-42	Cortland Cart & Carriage Co., Sidney, N. Y. Five-Passenger Touring $1695 Four-Passenger Roadster 1695	4-3¼x5	Herschell-Spill	16.9	115

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Apperson bounds in high from 1 mile an hour to 40 in 20 seconds. From a 40-mile speed comes to a dead stop in 4 seconds. Turns in 38¼ feet.

APPERSON BROS. AUTOMOBILE CO.,
KOKOMO, IND.

APPERSON

THE EIGHT
WITH EIGHTY LESS PARTS

Hupmobile

The Comfort Car

Hupp Motor Car Corporation
Detroit, Mich.

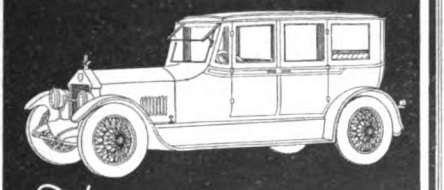
DORT

Quality Goes Clear Through

The enduring and uncommonly competent mechanical qualities of the Dort are now fittingly supplemented with bodies of delightful and distinctive beauty.

(2a)

DORT MOTOR CAR COMPANY
Flint, Mich.



The ROAMER
America's Smartest Car

Thirteen Models Custom Built to Your Order

THE BARLEY MOTOR CAR CO.
KALAMAZOO MICHIGAN

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Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel-base	Size of Tires
Haynes 47 See page 27	Haynes Automobile Co., Dept. 16, Kokomo, Ind. Tourster ..... $2935 Touring ..... 2935 Sp. Speedster ..... 3560 Suburban ..... 4250 Brougham ..... 3650 Coupe 3650	6-3½x5	Own	29.4	132	34x4½
Haynes 48	Haynes Automobile Co., Dept. 16, Kokomo, Ind. Tourster ..... $3635 Brougham ..... 4650 Touring ..... 3635 Suburban ..... 4950 Speedster ..... 4260 Coupe 4350	12-2¾x5	Own	36.3	132	34x4½
Holmes 1	Holmes Automobile Co., Winfield Way, Canton, Ohio. Four-Passenger Roadster ..... $3350 Seven-Passenger Touring ..... 3350 Coupe ..... 4250 Six-Passenger Sedan 4550	6-3½x4¼	Own	29.4	126	34x4½
Hudson Super-Six O	Hudson Motor Car Co., 12601 E. Jefferson St., Detroit, Mich. Seven-Passenger Phaeton ..... $2400 Four-Passenger Phaeton ..... 2400 Cabriolet ..... 3000 Sedan ..... 3400 Coupe ..... 3275 Touring Limousine ..... 3625 Limousine 4000	6-3½x5	Own	29.4	126	34x4½
Huffman W	Huffman Brothers Motor Co., Elkhart, Ind. Five-Passenger Touring ..... $1996 Two-Passenger Roadster 1995	6-3¼x4½	Continental	25.3	120	32x4
Hupmobile R See page 25	Hupp Motor Car Corp., Detroit, Mich. Touring ..... $1685 Roadster ..... 1685 Sedan ..... 2800 Coupe 2725	4-3¼x5½	Own	16.9	112	32x4
Jackson 6-38	Jackson Motors Corp., Jackson, Mich. Touring ..... $2150 Sport ..... 2885 Semi-Sport ..... 2550 Coupe ..... 3960 Sedan 3960	6-3¼x4½	Continental	25.3	121	33x4½
Jones 28-B. E. G.	Jones Motor Car Co., Wichita, Kans. Seven-Passenger ..... $2750 Speedster ..... 2750 Two-Passenger 2750	6-3½x5¼	Continental	29.4	125	34x4½
Jordan F See page 29	Jordan Motor Car Co., Cleveland, Ohio Seven-Passenger Touring $2875	6-3½x5¼	Continental	29.4	127	32x4½
Jordan M	Jordan Motor Car Co., Cleveland, Ohio Five-Passenger Touring ..... $2650 Two-Passenger Roadster ..... 2650 Four-Passenger Brougham ..... 3700 Five-Passenger Sedan 3700	6-3¼x4½	Continental	25.3	120	32x4
	Kentucky Wagon Mfg. Co.—See Dixie-Flyer.					
King H	King Motor Car Co., 1300 Jefferson Avenue, Detroit, Mich. Touring ..... $2835 Foursome ..... 2835 Limoudan ..... 4235 Road-King 2850	8-3 x5	Own	28.8	120	32x4½
Kissel Six	Kissel Motor Car Co., 400 Kissel Ave., Hartford Wis. Seven-Passenger Touring ..... $3475 Four-Passenger Tourster ..... 3475 Two-Passenger Speedster ..... 3475 Four-Passenger Coupe ..... 4275 Six Passenger Sedan ..... 4275 Urban Sedan 4650	6-3 1/16x5½	Own	36.3	124	32x4½

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PREMIER

—the new Aluminum Six, with magnetic gear shift—126¾-inch wheel base—roomy seven passenger—$4300 f. o. b. factory—a super-de-luxe equipage with unusual refinements and advantages.

PREMIER MOTOR CORPORATION, Indianapolis, U. S. A.

HAYNES
CHARACTER CARS

BEAUTY, strength, power and comfort—these are the essential factors of character in a car.

Real character cannot exist if one factor must be sacrificed to secure another. Haynes engineers and designers have held this principle through 27 years of Haynes history—and the new series and new 1921 Haynes character cars exemplify the worthiness of their skill.

A descriptive brochure, and prices, will be sent on request. Address Dept. 16.

The Haynes Automobile Co.
Kokomo, Indiana

1893——America's First Car——1921

handley Knight

The Handley-Knight Company

Manufacturers of

Knight Motored Automobiles

Kalamazoo Michigan

The Light Weight, Low Priced Car
"Built for the Owner"

Seneca MOTOR CAR

Sturdy construction, plus simplicity of parts, combines to give the Seneca unusual results in power and performance. Equipped with LeRoi four cylinder 27 horsepower motor—cast en bloc—all moving parts enclosed. Extremely economical on fuel consumption (25 miles to gallon of gasoline). Has standard equipment throughout, including electric starting and lighting system. 108 inch wheel base with 56 inch tread. Special pressed steel, 4 inch channel frame. Cantilever springs, full floating rear axle; irreversible steering gear; stream line body most comfortably cushioned; Brewster green in color with black chassis and chrome yellow wheels. Guaranteed Rayntite top with side curtains, full set of tools, pump, speedometer, robe, etc.

Price $1185.00

Write for Dealer's Proposition

Seneca Motor Car Co.
Dept. 127 Fostoria, Ohio, U. S. A.

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Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel-base	Size of Tires
Kline-Kar 6	Kline Car Corp., 701-11 E. Carey St., Richmond Va.	6-3¼x4½	Continental	26.8	121	32x4
	Auxiliary Touring $2290					
	Sport 2265					
	Roadster 2265					
LaFayette	La Fayette Motors Co., Mars Hill, Indianapolis, Ind.	8-3¼x5¼	Own	33.8	123	33x5
	Touring $5625					
	Torpedo 5625					
	Sedan 7400					
	Coupe 7200					
	Limousine 7500					
Leach 21 A.B.C.	Leach-Biltwell Co., 4800 Santa Fe Ave., Los Angeles Cal.	6-3½x5¼	Continental	30.4	128	32x4½
	Five-Passenger $5200					
	Seven-Passenger 5700					
	Three-Passenger 5700					
Lexington S-T See page 31	Lexington Motor Co., Connersville, Ind.	6-3¼x4½	Continental	25.3	122	32x4
	Thorobred $2285					
	Lex. Sedan 2785					
	Coupe 3250					
	Sedan 3350					
	Touring 2985	.....	Ansted	.....	128	32x4½
	Sedanette 4150					
	Solon Sedan 4250					
Liberty 10-C	Liberty Motor Car Co., Charlevoix Ave. & Connors Rd., Detroit, Mich.	6-3½x5	Own	23.4	117	32x4
	Five-Passenger Touring $1795					
	Two-Passenger Roadster 1795					
	Four-Passenger Sport 1885					
	Five-Passenger Sedan 2850					
	Four-Passenger Coupe 2825					
Lincoln	Lincoln Motor Co., Warren Ave., Detroit, Mich.	8-3⅜x5	Own	36.4	130	33x5
	Touring $4600					
	Phaeton 4600					
	Roadster 4600					
	Coupe 5750					
	Sedan 6000					
	Town Brougham 6250					
	Suburban Limousine 6600	.....	.....	.....	136	.....
	Town Car 6600					
Locomobile 48	Hare's Motors, 16 W. 61se St., New York, N.Y.	6-4½x5½	Own	48.6	142	35x5
	Seven-Passenger Touring $7550					
	Four-Passenger Sport 7650					
	Limousine 9150					
	Landaulet 9150					
Lorraine 21 T-S C R	Lorraine Motors Corp., Grand Rapids, Mich.	4-3½x5	Herschell-Spill	19.6	114	32x4
	Touring					
	Sedan					
	Coupe					
	Roadster					
	Louisiana Motor Car Co.—See Bour-Davis.					
McFarlan	McFarlan Motor Co., Mount & High Sts., Connersville, Ind.	6-4½x6	Own	48.6	140	35x5
	Touring					
	Touring Sedan					
	Sport Sedan	.....	.....	.....	.....	33x5
	Sport					
Madison	Bull-Tractor Madison Motors Corp., Second & Sycamore Sts., Anderson, Ind.	6-3½x5	Rutenber	23.4	115	32x4
	Five-Passenger Touring $1550					
Maibohm See Page 23	Maibohm Sandusky, Ohio	6-3½x4¼	Falls	23.4	116	32x4
	Phaeton $1575					
	Roadster 1575					
	Sedan 2395					
	Coupe 2395					
	Sport Special					

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METZ MASTER SIX

RUGGED and sturdy, with a wide range of power, economical to operate, comfortable to ride in, yet with all the lines and appointments that stamp it as out-of-the-ordinary.

"The Car You'll Be Proud to Own"

5 Passenger Touring Car $1995

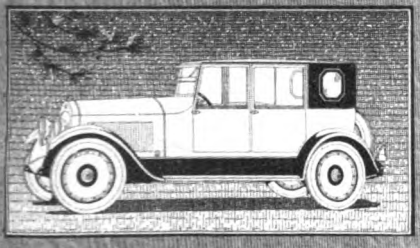
Metz Sales Corporation
Metz Building
915-921 Boylston St., Boston, Mass.

JORDAN
MOTOR CARS

JORDAN CARS contain more of the complete standard specifications of the Society of Automotive Engineers than any other car in the world today.

JORDAN MOTOR CAR CO.
Cleveland, Ohio

JORDAN



There's a Touch of Tomorrow in all Cole Does Today

*Cole Aero-*EIGHT

Prices on Application

Cole Motor Car Company
Creators of Advanced Motor Cars
Indianapolis, U. S. A.

Motor Car Dominance

The motor car dealer who seeks top quality will do well to investigate the Greater American opportunity.

The American franchise, granting the Balanced Six for certain desirable territories, is available to dealers of the American type. It carries all the benefit of American advertising and sales co-operation.

Two great factories produce this splendid car in all popular models. Investigate this dominant opportunity.

AMERICAN MOTORS CORP'N
Plainfield, N. J.
American-Southern Motors Corporation
Greensboro, N. C.

Touring Cars
Roadsters
Sedans

The Balanced Six
AMERICAN
Miles of Smiles

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Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel-base	Size of Tires
Marmon B 34	Nordyke & Marmon Co., Kentucky Ave. & Morris St., Indianapolis, Ind.	6-3¾x5½	Own	33.7	136	32x4½
	Seven-Passenger Touring $5000					
	Roadster 5000					
	Four-Passenger Touring 5000					
	Speedster 5300					
	Seven-Passenger Sedan 6000					33x5
	Town Car 6000					
	Coupe 6150					
	Limousine 6600					
	Martin-Wasp Corp.—See Wasp.					
Maxwell 25 See page 33	Maxwell Motor Sales Corp., Detroit, Mich.—See also Chalmers	4-3⅝x4½	Own	21.0	118	30x3½
	Four-Passenger Touring $ 995					
	Three-Passenger Roadster 995					
	Five-Passenger Sedan 1695					
	Three-Passenger Coupe 1595					
Mercer Series 5	Hare's Motors 16 W. 61st St., New York, N. Y.	4-3¾x6¾	Own	22.5	132	33x5
	Four-Passenger Sport $3950					
	Six-Passenger Touring 3950					
	Runabout 3950					
	Raceabout 3675				115	
	Coupe 5150					
	Touring Limousine 5650					
Metz Master Six See page 29	Metz Sales Corp., 915-921 Boylston St., Boston Mass (Sole Distributors for Metz Co., Waltham, Mass.)	6-3½x5	Rutenber	23.4	120	32x4
	Touring $1995					
	Roadster 1995					
	Coupe 2795					
	Sedan 2895					
Merit B	Merit Motor Co., 6505-09 Cedar Ave., Cleveland, Ohio	6-3½x4½	Walker	23.4	119	32x4
	Four-Passenger Touring $2295					
	Two-Passenger Roadster 2295					
Mitchell, G 40-42 See page 33	Mitchell Motors Co., Racine, Wis.	6-3¼x5	Own	25.3	129	32x4
	Roadster $1750					
	Five-Passenger Touring 1750					
	Five-Passenger Sedan 2900					
	Four-Passenger Coupe 2800					
	Four-Passenger Sport					32x4
	Seven-Passenger Touring				127	34x4½
Monitor	Monitor Motor Car Co., Columbus, Ohio	6-3¼x4½	Continental	25.8	121	32x4
	Five-Passenger Touring $3475					
	Four-Passenger Roadster 3475					
	Five-Passenger Sedan 3475					
Monroe 8-9	Small Co., Wm., 33-37 W 11th St., Indianapolis, Ind.	4-3¼x4½	Own	16.9	115	32x3½
	Touring $1440					
Moon 6-68-20	Moon Motor Car Co., 4400 N. Main St., St. Louis, Mo.	6-3½x5¼	Continental	20.4	125	32x4½
	Touring $3485					
Moon 6-48-20	Moon Motor Car Co., 4400 N. Main St., St. Louis, Mo.	6-3¼x4½	Continental	25.3	125	32x4
	Touring $1985					
	Roadster 2085					
	Coupe 2985					
	Sedan 2985					
Moore	Moore Motor Vehicle Co., N. Tilton St., Danville, Ill.	4-3x5	Own	14.4	108	30x3½
	Five-Passenger Touring $1175					

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The Car of the Hour

Elgin SIX

Elgin Motor Car Corporation
ARGO (Suburb of Chicago) ILLINOIS

CLEVELAND SIX

Touring Car
Five Passengers

Roadster — *Three Passengers*
Sedan — *Five Passengers*

Coupe
Four Passengers

CLEVELAND AUTOMOBILE COMPANY
Cleveland - - - OHIO

Export Department:
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Cable Address: "CLEVE-AUTO"

Lexington
MINUTE MAN SIX

"In Unity There Is Strength"

THE Lexington institution—with its ten affiliated factories—occupies an impregnable position. On this rests the firm, public faith in the Lexington Car.

LEXINGTON MOTOR COMPANY
Connersville, Indiana, U. S. A.
Subsidiary United States Automotive Corporation

You Sell
Power—
Speed—
Luxury—
Economy—
in the

COLONIAL SIX

Backed by the Colonial Merchandising policy of "Factory Denomination of Local Sales Territory" embodying direct factory co-operation with both dealers and users.

SPECIFICATIONS

Motor: 6 cylinder valve-in-head 3½ inch bore. 5¼ inch stroke. Starting and Lighting: Bijur. Clutch: Warner, Multiple Disc. Transmission: Warner. Axles: Full Floating. Universals: Thermoid. Wheelbase: 130 inches. Body Types: 2 passenger Roadster, 4 passenger Sportster, 6 passenger Touring, 4 passenger Sedanette, 6 passenger Sedan.

COLONIAL MOTORS CORPORATION
1108 Boylston Street Boston, Mass.

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Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel-base
Nash 681-686-687-684-685-682	**Nash Motors Co., Kenosha, Wis.**	**6-3¼x5**	Own	25.3	121
	Five-Passenger Touring.....$1695				
	Two-Passenger Roadster..... 1695				
	Four-Passenger Sport..... 1850				
	Seven-Passenger Sedan..... 2895	.....	.....	.....	127
	Four-Passenger Coupe..... 2650				
	Seven-Passenger Tourist..... 1875				
National "Sextet"	**National Motor Car & Vehicle Corp., 1041 E. 22nd St., Indianapolis, Ind.**	**6-3½x5¼**	Own	29.4	130
	Two-Passenger Roadster.....$3750				
	Four-Passenger Phaeton..... 3750				
	Seven-Passenger Touring..... 3750				
	Seven-Passenger Sedan..... 4950				
	Four-Passenger Coupe..... 4900				
	Nordyke & Marmon Co.—See Marmon.				
Noma X C	**Noma Motor Corp., 155 Ave. D, New York, N. Y.**	6-3¼x4½	Continental	25.3	128
	Two-Passenger.....$3000				
	Four-Passenger..... 3200				
Norwalk 18	**Norwalk Motor Car Co., Martinsburg, W. Va.**	4-3½x5	Lycoming	19.6	110
	Five-Passenger.....				
Oakland 34-C	**Oakland Motor Car Co., 240 Oakland Ave., Pontiac, Mich.**	6-2 11/16x4¾	Own	19.0	115
	Roadster.....$1395				
	Touring..... 1395				
	Coupe..... 2065				
	Sedan..... 2065				
	Ohio Motor Vehicle Co.—See Ferris.				
Oldsmobile 43-A	**Olds Motor Works, Lansing, Mich.**	4-3 11/16x5¼	Own	21.7	115
	Touring.....$1445				
	Roadster..... 1445				
	Sedan..... 2145				
	Coupe..... 2145				
Oldsmobile 46-B	**Olds Motor Works, Lansing, Mich.**	8-2⅞x4¾	Own	26.4	122
	Touring.....$2100				
	Pacemaker..... 2100				
	Sedan..... 3300				
Overland 4 **See page 21**	**Willys-Overland, Inc., Toledo, Ohio**				
	Five-Passenger Touring	4-3⅜x4	Own	18.2	100
	Two-Passenger Roadster				
	Five-Passenger Sedan				
	Two-Passenger Coupe (Wire Wheels)	.....	.....	.....	.....
Owen Magnetic 60	**Owen Magnetic Motor Car Corp., Wilkes-Barre Pa.**	**6-4x5½**	Own	38.4	142
	Touring.....$7000				
	Four-Passenger..... 7000				
	Coupe..... 8000				
	Sedan..... 8500				
Packard Single-Six	**Packard Motor Car Co., E. Grand Blvd. & Belt Line, Detroit, Mich.**	6-3⅜x4½	Own	27.3	116
	Runabout.....				
	Touring.....				
	Coupe.....				
	Sedan.....				
Packard Twin-Six	**Packard Motor Car Co., E. Grand Blvd. & Belt Line, Detroit, Mich.**	12-3x5	Own	43.2	136
	Touring.....				
	Duplex Sedan.....				
	Duplex Coupe.....				
	Runabout.....				
	Limousine.....				
	Phaeton.....				

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MITCHELL

The Mitchell always wins more friends when competition is keenest. For then it shows best its comparative worth.

Years may come and years may go, but an increasing number of wise motorists seek a car like the Mitchell. Mitchell has been building good automobiles for 19 years—and Mitchell owners are loyal.

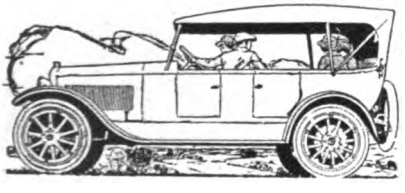
The Mitchell is built by one of America's oldest concerns. It was founded in 1834. Into the Mitchell is brought all these years of experience and sound business policy.

MITCHELL MOTORS CO.
Incorporated
RACINE, WISCONSIN

The best gauge of what the new and powerful Maxwell organization signifies to the motor car industry is the extraordinary interest being manifested by dealers all over the country.

MAXWELL

MOTOR CHANDLER CARS



The Most Fairly Priced Fine Car

SIX SPLENDID BODY TYPES

Chandler Motor Car Company
CLEVELAND, OHIO

CABLE ADDRESS: "Chanmotor"
EXPORT OFFICE: 5 Columbus Circle, New York

BELL
Motor Cars

DEALERS!
Write today for agency.

WE need a few more good wide-awake distributors for the "Bell Car"—it is a car that almost sells itself, owing to its high standard of construction, embodying as it does the same general principle as contained in cars selling for $2,000 to $3,000.

Write us today for our facts about the "Bell" and our proposition to distributors.

Bell Motor Car Co.
York, Pa.
Export Dept., 100 Broad St.

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Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufactu

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheel-base
Paige 6-42	Paige-Detroit Motor Car Co., Fort & McKinstry Sts., Detroit, Mich. Five-Passenger Touring $1770 Two-Passenger Roadster 1770 Five-Passenger Sedan 2645 Four-Passenger Coupe 2525 Four-Passenger Sport 1990	6-3¼x5	Own	25.3	119
Paige 6-66	Paige-Detroit Motor Car Co., Fort & McKinstry Sts., Detroit, Mich. Four-Passenger Sport $2895 Seven-Passenger Touring 2795 Seven-Passenger Sedan 3750 Five-Passenger Coupe 3675	6-3¾x5	Continental	33.7	131
Pan-American 6-55 E.F.G. See page 19	Pan-American Motors Corp., Decatur, Ill. Five-Passenger Touring $2450 Two-Passenger Roadster 2450 Seven-Passenger Sedan 3600	6-3¼x5	Herschell-Spill	25.3	121
Pan A	Pan Motor Co., St. Cloud, Minn. Touring $1500	4-3½x5	Own	16.9	108
Parenti 1921 See Page 21	Parenti Motors Corp., Buffalo, N. Y. Five-Passenger Touring $2900 Five-Passenger Sedan 3000	8-2¾x4¼	Own	24.2	123
Paterson 6-50	Paterson Co., W. A., Flint, Mich. Five-Passenger Touring $2100 Five-Passenger Coupe 3300 Seven-Passenger Touring 2100 Sedan 3300	6-3¼x4½	Continental	25.3	120
Peerless 56	Peerless Motor Car Co., Quincy Ave. & S. E. 93rd St., Cleveland, Ohio Roadster $3200 Touring 3200 Coupe 3920 Sedan 4140 Sedan Limousine 4400	8-3¼x5	Own	33.8	125
Phianna R-30	Carpenter, M. H., 93 Sunswick St., Long Island City, N. Y. Chassis $6500 Touring 9500 Closed Car 11500	4-3⅜x6	Own	34.8	125
Piedmont 4-30	Piedmont Motor Car Co., Lynchburg, Va. Five-Passenger Touring $1485	4-3½x5	Lycoming	19.6	116
Piedmont 6-40	Piedmont Motor Car Co., Lynchburg, Va. Five-Passenger Touring $1945	6-3¼x4½	Continental	25.8	122
Pierce-Arrow 38	Pierce-Arrow Motor Car Co., 1695 Elmwood Ave., Buffalo, N. Y. Chassis $6000 Four-Passenger Coupe Sedan 8500 Four-Passenger Brougham 8500 Four-Passenger Touring 7500 Limousine 8750 Landaulet 9000 Vestibule Sedan 9000 Sedan 9000 Six-Passenger Touring 7500 Seven-Passenger Touring 7500 Runabout 8000	6-4 x5½	Own	38.4	134
Pilot 6-65	Pilot Motor Car Co., 281 Fort Wayne Ave., Richmond, Ind. Two-Passenger Roadster Five-Passenger Touring Four-Passenger Sport Touring Five-Passenger Sedan Four-Passenger Coupe Seven-Passenger Touring	6-3¼x5	Herschell-Spill	25.3	126
Porter 46	American & British Mfg. Corp., Crescent Ave., Bridgeport, Conn. Seven-Passenger Touring $9200	4-4 5/16x6¾	Own	34.6	142

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Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel-base	Size of Tires
Premier 6-D See page 27	Premier Motor Corp., Indianapolis, Ind Two-Passenger Roadster ..... $4600 Four-Passenger Open..... 4600 Seven-Passenger Open..... 4600 Four-Passenger Closed..... 6000 Seven-Passenger Limousine ..... 6100 Four-Passenger Coupe 5600	6-3⅝x5½	Own	27.3	126¾	32x4½ 33x5
R & V R	Root and Van Dervoort Engineering Co., East Moline, Ill..... Five-Passenger Touring..... $2150 Five-Passenger Sedan	4-3¾x5	Own	22.5	116	32x4
R & V J	Root and Van Dervoort Engineering Co., East Moline, Ill ..... Seven-Passenger Touring..... $3350 Four-Passenger Sport..... 3350 Two-Passenger Roadster ..... 3350 Seven-Passenger Sedan..... 4200 Four-Passenger Coupe..... 4000	6-3½x4½	Own	29.4	127	32x4½
Ros T-6 See page 21	Ros Motor Car Co., Lansing, Mich..... Touring ..... $1850 Roadster ..... 1850 Sedan..... 2750 Coupe..... 2700	6-3 1/16x5	Own	24.3	120	33x4
ReVere F.	ReVere Motor Car Corp., Logansport, Ind..... Five-Passenger Touring..... $4650 Four-Passenger Touring..... 4650 Roadster..... 4650 Speedster..... 4850 Sedan..... 6500	4-4½x6	Duesenberg	32.4	127	33x4½
Reamer See page 25	Barley Motor Car Co., Kalamazoo, Mich..... Four-Passenger Sport..... .... Two-Passenger Speedster .... Four-Passenger Roadster..... ... Two-Passenger Roadster..... .... Four-Passenger Touring..... .... Seven-Passenger Touring..... .... Five-Passenger Landaulet..... .... Seven-Passenger Limousine.....	4-4x6	Duesenberg	25.6	130	32x4½
Reamer	Barley Motor Car Co., Kalamazoo Mich..... Four-Passenger Touring..... .... Seven-Passenger Touring..... .... Four-Passenger Sport..... .... Four-Passenger Roadster..... .... Three-Passenger Cabriolet..... .... Five-Passenger Coupe..... .... Five-Passenger Sedan..... .... Seven-Passenger Sedan..... .... Five-Passenger Touring Car	6-3½x5¼	Continental	29.4	130	32x4½
Rock Falls 12	Rock Falls Mfg. Co., Sterling, Ill ..... Sedan ..... Limousine.....	6-3½x5¼	Own	30.4	136	35x5
Saxon 126	Saxon Motor Car Corp., 3733 Beaufait Ave. Detroit, Mich..... Touring..... $1895 Sedan..... 2795 Foursome..... 2795	4-3¾x5	Own	18.2	112	32x4
Sayers-Six	Sayers & Scoville Co., Gest and Summer Sts Cincinnati, Ohio..... Five-Passenger Touring..... $2295 Five-Passenger Sedan ..... 3295 Two-Passenger Roadster..... 2595	6-3½x4½	Continental	25.3	118	32x4
Scripps-Booth B 39-40-41-42 See page 23	Scripps-Booth Corp., Detroit, Mich ... Five-Passenger Touring..... $1545 Three-Passenger Roadster..... 1545 Five-Passenger Sedan..... 2295 Four-Passenger Coupe 2215	6-2 11/16x4¾	Northway	19.0	115	32x4

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Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel-base	Size of Tires
Seneca L O See page 27	Seneca Motor Car Co., Dept.127, Fosteria, Ohio Five-Passenger Touring.....$1185 Two-Passenger Roadster..... 1185	4-3½x4½	LeRoi	15.6	106	30x3½
Severin H	Severin Motor Co., 1608-1710 Grand Ave., Kansas City, Mo..... National Touring.....$2550 Sport 2550	6-3¼x5¼	Continental	29.4	122½	32x4½
	Shaw Livery Co; Walden W.— See Colonial					
Sheridan B 40-41-42-43	Sheridan Motor Car Co., Muncie, Ind..... Roadster.....$1685 Touring ..... 1685 Coupe..... Sedan	4-3 11/16x5¼	Own	21.7	116	33x4
Skelton 35	Skelton Motors Corp., 3301 Olive St., St. Louis, Mo.,..... Two-Passenger Roadster.....$1295 Five-Passenger Touring..... 1295	4-3½x5	Lycoming	19.6	112	32x3½
	Small Co.—See Monroe					
	Spacke Machine & Tool Co.—See Brook.					
Standard I	Standard Steel Car Co., Frick Bldg., Pittsburgh, Pa..... Four-Passenger Roadster.....$3000 Seven-Passenger Touring..... 3000 Four-Passenger Coupe..... 4500 Seven-Passenger Sedan..... 4800 Four-Passenger Sedanette ..... 4500 Seven-Passenger Vestibule Sedan..... 5000	8-3¼x5	Own	33.8	127	34x4½
Stanwood-Six	Stanwood Motor Car Co., Fullerton Bldg., St. Louis, Mo..... Five-Passenger Touring.....	6-3¼x4½	Continental	25.3	118	33x4
Stearns SKLA	Stearns Co., F. B., 12435 Euclid Ave., Cleveland, Ohio..... Four-Passenger..... $2475 Five-Passenger..... 2450 Seven-Passenger..... 2675 Roadster..... 2550 Coupe..... 3400 Limousine..... 4250 Sedan..... 3700 Town Car..... 4400	4-3¾x5⅝	Own	23.5	125	34x4½
Stevens-Duryea E	Stevens-Duryea, Chicopee Falls, Mass..... Seven-Passenger Touring.....$8000 Four-Passenger Sport..... 8000 Four-Passenger Brougham..... 9500 Seven-Passenger Vestibule Limousine. 9500	6-4 7/16x5½	Own	47.2	138	35x5
Stephens Salient Six, 83, 84, 85, 85.	Stevens Motors Works of Moline Plow Co. Freeport, Ill ..... Two-Passenger Roadster.....$2400 Four-Passenger Touring ..... 2400 Six-Passenger Touring..... 2400 Five-Passenger Sedan..... 2400	6-3¼x4½	Own	25.3	122	33x4½
Studebaker E. G.	Studebaker Corp. of America, Bronson & Main Sts., South Bend, Ind..... Touring $2150	6-3⅞x5	Own	36.0	126	33x4½
Studebaker E. H.	Studebaker Corp. of America, Bronson & Main Sts., South Bend, Ind..... Touring .....$1750 Two-Passenger Roadster..... 1750 Four-Passenger Roadster..... 1750 Five-Passenger Sedan..... 2750 Four-Passenger Coupe..... 2650	6-3½x5	Own	29.4	119	32x4

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Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel-base	Size of Tires
Studebaker E. J	Studebaker Corp. of America, Bronson and Main Sts., South Bend, Ind. Touring ..... $1425 Landau Roadster ..... 1850 Five-Passenger Sedan 2450	6-3½x4½	Own	23.4	112	32x4
Stutz H	Stutz Motor Car Co. of America, Tenth St. & N. Capitol Ave., Indianapolis, Ind. Four-Passenger Sport ..... $4000 Six-Passenger Touring ..... 4000 Two-Passenger Roadster ..... 3900 Two-Passenger Bearcat ..... 3900 Coupe 5500	4-4½x6	Own	30.6	130 120	32x4½ .....
Templar A-445	Templars Motor Corp., Halstead Ave., Cleveland, Ohio Sportette ..... $3885 Touring ..... 2885 Touring Roadster ..... 2885 Sedan ..... 3785 Coupe 3785	4-3½x5½	Own	18.2	118	32x4
Tulsa E-1-2-3	Tulsa Auto Mfg. Co., Tulsa, Okla. Five-Passenger Touring ..... $1385 Three-Passenger Roadster ..... 1385 Three-Passenger Oil Field Special Roadster 1385	4-3½x5	Herschell-Spill	19.6	117½	33x4
Tulsa F	Tulsa Auto. Mfg. Co., Tulsa, Okla. Five-Passenger Touring $1765	6-3¼x5	Herschell-Spill	25.3	117½	33x4
Velie 34 See page 23	Velie Motors Corp., 169 Velie Place, Moline, Ill. Five-Passenger ..... $1385 Two-Passenger ..... 1485 Sedan ..... 2485 Coupe 2485	6-3½x4¼	Falls	23.4	112	32x3½
Velie 48	Velie Motors Corp., 199 Velie Place, Moline, Ill. Five-Passenger ..... $1885 Two-Passenger ..... 1885 Sport ..... 2200 Coupe ..... 2650 Sedan 2650	6-3¼x4½	Continental	25.3	115	32x4
Vogue 6-55	Vogue Motor Car Co., S. Washington and River Sts., Tiffin, Ohio Five-Passenger Touring ..... $3285 Seven-Passenger Sedan ..... 3250 Five-Passenger Coupe 3250	6-3¼x5	Herschell-Spill	25.3	124	32x4
Vogue 6-66	Vogue Motor Car Co., S. Washington and River Sts., Tiffin, Ohio Five-Passenger Touring ..... $2485 Seven-Passenger Sedan ..... 3450 Five-Passenger Coupe 3450	6-3½x5¼	Continental	29.4	124	33x4½
Washington 1921	Washington Motor Co., Eaton, Ohio Touring ..... $1685 Roadster 1685	6-3½x4¼	Falls	23.4	114	32x4
Wasp 211	Martin-Wasp Corp., Bennington, Vt. Five-Passenger Open $6500	4-4¾x5½	Wisconsin	36.1	132	33x5
Westcott C-48	Westcott Motor Car Co., Warder & Spring Sts., Springfield, Ohio Seven-Passenger Touring ..... $2990 Seven-Passenger Sedan ..... 4590 Seven-Passenger Limousine-Sedan 4690	6-3½x5¼	Continental	29.4	125	32x4½
Westcott C-38	Westcott Motor Car Co., Warder & Spring Sts., Springfield, Ohio Five-Passenger Touring ..... $2290 Two-Passenger Roadster ..... 2290 Four-Passenger Coupe ..... 3390 Five-Passenger Sedan 3390	6-3¼x4½	Continental	25.3	118	33x4
Winther Six 61 See page 30	Winther Motor Truck Co., Kenosha, Wis. Five-Passenger Touring	6-3¼x5	Herschell-Spill	25.3	120	33x4

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Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel-base	Size of Tires
Willys-Knight 20 See page 21	Willys-Overland, Inc., Toledo, Ohio (See Overland; also Willys Six.)	4-3⅝x4½	Own	21.0	118	33x4
	Five-Passenger Touring Car					
	Three-Passenger Roadster					
	Coupe	.....	.....	.....	.....	34x4½
	Sedan					
Willys-Knight 8	Willys-Overland Inc., Toledo, Ohio	8-3⅝x4	Own	36.4	125	35x5
	Touring Car					
	Sedan					
	Coupe					
	Limousine					
Willys Six	Willys-Overland, Inc., Toledo, Ohio	6-3½x5¼	Continental	29.4	120	33x4½
	Touring Car					
Winton 25	Winton Co., 10610 Beres Rd., Cleveland, Ohio	6-3¾x5¼	Own	33.7	123	35x5
	Two-Passenger Roadster $4600					
	Four-Passenger Sport 4975					
	Seven-Passenger Touring 4600					
	Victoria Four-Passenger 5050					
	Sedan Four-Passenger Sport 5050					
	Sedan Seven-Passenger Fore-Door 6200					
	Limousine French Town Car 5050					
	Seven-Passenger Limousine Three-Quarter 5050					
	Seven-Passenger, Fore-Door Limousine 6200					
	Seven-Passenger Limousine-Landaulet 6350					

Electric Automobiles

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Make of Battery	Wheel-base	Size of Tires
Detroit 86-88	Detroit Electric Car Co., 6561 Mt. Elliott Ave., Detroit Mich	Own	100	33x4½
	Four-Passenger Rear Drive Brougham $4000			
	Five-Passenger, Duplex Drive Brougham 4000			
Milburn 27L	Milburn Wagon Co., Monroe St., Toledo, Ohio	Philadelphia	105	33x4
	Five-Passenger Brougham $3685			
Rauch & Lang B 46 C 55 (See page 23)	Rauch & Lang, Chicopee Falls, Mass	Philadelphia Exide	92	33x4½
	Brougham			
	Coach	.....	102	.....

Steam Automobiles

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	H.P.	Wheel-base	Size of Tires
Stanley 735 A. B. C. D.	Stanley Motor Carriage Co., 44 Hunt St., Newton, Mass	20	130	34x4½
	Five-Passenger Touring $3950			
	Seven-Passenger Touring 3950			
	Four-Passenger Coupe 5650			
	Seven-Passenger Sedan 5775			

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Gasoline Commercial Vehicles

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders, Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheelbase	Size of Tires Front	Size of Tires Rear	Price
	Abbott-Downing Truck & Body Co.—See Concord.								
Acason See page 41	Acason Motor Truck Co., 431 Brooklyn Ave., Detroit, Mich.								
	Model R	1	4-3¾x5¼	Waukesha	22.5	142	36x3½	36x5	....
	Model RB	1½	4-3¾x5¼	Waukesha	22.5	142	36x3½	36x6	....
	Model H	2½	4-4½x5¾	Waukesha	30.6	150	36x7	36x8	....
	Model L	3½	4-4½x5¾	Waukesha	30.6	180	35x5	36x5D	....
	Model M	5	4-5 x6¼	Waukesha	40.0	187	36x6	40x6D	....
Ace	American Motor Truck Co., 16th St. & B. & O. R. R., Newark, Ohio.								
	Model	2½	4-4¼x5½	Buda	28.9	144 156	36x4	36x7	....
Acme See page 53	Acme Motor Truck Co., 460 Mitchell St., Cadillac, Mich.								
	Model G	¾	4-3¾x5	Continental	22.5	130	34x5P	34x5P	....
	Model B	1	4-3¾x5	Continental	22.5	130	34x3½	34x5	$2175
	Model F	1½	4-3¾x5	Continental	22.5	141	34x3½	34x5	2475
	Model A	2	4-4½x5¼	Continental	27.2	148	36x4	36x7	3050
	Model C	3½	4-4½x5½	Continental	32.4	168	36x5	40x10	4050
	Model E	5	4-4¾x6	Continental	36.1	180	36x6	40x10	5150
Air-O-Flex	Air-O-Flex Automobile Corp., 519 Hillger Ave., Detroit, Mich.								
	Model C	1¾	4-3¾x5¼	Buda	22.5	160	36x3½	36x5	...
All-American See page 14	All-American Truck Co., 6503 West Grand Avenue, Chicago, Ill.								
	Model A	1½	4-3¼x5	Herschell-Spill	16.9	130	32x4P	32x4P	1595
All Power	All Power Truck Co., 127 Woodbridge Ave. E., Detroit, Mich.								
	Model C	5	4-4½x5¼	Continental	27.2	168	36x6	36x10	6000
	American Motor Truck Co.—See Ace.								
American	American Motor Truck & Tractor Co., 110 W. 40th St., New York, N. Y.								
	Model 25	2½	4-4x6	Wisconsin	25.6	158	36x4	36x4D	....
	Model 40	4	4-4½x6	Wisconsin	32.4	158	36x5	36x5D	....
Apex	Hamilton Motors Co., Fulton St., Grand Haven, Mich.								
	Model C	1	4-3½x5¼	Buda	19.6	130	33x4P	32x3½	1745
	Model D	1½	4-3½x5¼	Buda	19.6	130	32x3½	32x4	1915
	Model E	2½	4-4¼x5½	Buda	28.9	150	36x4	36x6	2695
Armleder	Armleder Co., O., Plum, Charles & 12th Sts., Cincinnati, Ohio.								
	Model 20	1	4-3¾x5½	Buda	22.5	148	34x3½	34x5	....
	Model H. W.	2½	4-4¼x5½	Buda	28.9	148 166	36x4	36x7	....
	Model K. W.	3½	4-4½x6	Buda	32.4	156 186	36x5	36x5D	....
Atco	American Truck & Trailer Corp., Stoddard Pl., Kankakee, Ill.								
	Model B	1½	4-3¾x5¼	Buda	22.5	132	34x5P	36x6	2700
	Model B1	1½	4-3¾x5¼	Buda	22.5	132	34x5P	36x6P	2450
	Model A	2½	4-4¼x5½	Buda	28.9	150	36x4P	36x7	3150
Atlas	Atlas Truck Corp., York, Pa.								
	Model 21	1	4-3½x5	Lycoming	19.6	130	32x4¼P	32x4¼P	....
Atterbury See page 53	Atterbury Motor Car Co., Buffalo, N. Y.								
	Model 20 R	1½	4-3¾x5	Continental	22.5	144	34x3½	34x5	2775
	Model 7 CX	2½	4-4½x5¼	Continental	27.2	153½	36x4	36x4D	3575
	Model 7 D	3½	4-4½x5½	Continental	32.4	167½	36x5	40x5D	4375
	Model 8 E	5	4-4¾ x6	Continental	36 1	167½	36x5	40x6D	5975
Autocar	Autocar Co., Lancaster Ave., Ardmore, Pa.								
	Model XXI-F	2	2-4¾x4½	Own	18.1	97	34x4P	34x5P	2300
	Model XXI-G	2	2-4¾x4½	Own	18.1	120	34x4	34x5	2400
	Model XXVI-Y	....	4-4¼x5½	Own	28.9	120	34x5	36x10	4250
	Model XXVI-B	....	4-4¼x5½	Own	28.9	156	34x5	36x10	4500

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Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders, Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheelbase	Size of Tires Front	Size of Tires Rear	Price
Available	Available Truck Co., 1501-49 N. Kilpatrick Ave., Chicago, Ill.								
	Model H1½	1½	4-4 x5⅛	Hercules	25.6	147	36x3½	36x5	$2750
	Model H2½	2½	4-4 x5⅛	Hercules	25.6	155½	36x4	36x8	3475
	Model H3½	3½	4-4½x5½	Hercules	32.4	179½	36x5	40x5D	4475
	Model H5	5	4-4¾x6	Hercules	36.1	188	36x6	40x6D	5575
	Model H7	7	4-5 x6	Hercules	40.0	190	36x6	40x14	6875
Avery	Avery Co., 949 Iowa St., Peoria, Ill.								
	Model I	1	6-3x4	Own	21.6	129	34x5	34x5	2000
Beck	Beck-Hawkeye Motor Truck Works, 901-13 First Ave. W. Cedar Rapids, Iowa.								
	Model A Jr. 30	....	4-3½x5	Herschell-Spill.	19.6	132	32x4½-P	33x5-P	2300
	Model A 30	1½	4-3½x5	Herschell-Spill.	19.6	132	32x4½	33x5	1950
	Model B 30	1½	4-3¾x5	Herschell-Spill.	22.5	132	34x5	36x6	2350
	Model C 40	2	4-4¾x5	Herschell-Spill.	22.5	144	34x3½	34x6	2290
	Model D 50	3	4-4½x5½	Herschell-Spill.	32.4	144	36x5	36x5D	3150
Bell See page 33	**Bell Motor Car Co., York, Pa.**	¾	4-3¾x4¼	G. B. & S	22.5	115	31x4P	31x4P	1150
Belmont	Belmont Motors Corp., 29 N. Second St., Harrisburg, Pa.								
	Model A	½	4-3¾x4¼	G. B. & S.	22.5	113	34x4	34x4	....
	Model B	1½	4-3¾x5	Wisconsin	22.5	144	36x3½	36x5	....
	Model C	2	4-4 x6	Wisconsin	25.6	152	36x4	36x7	....
Bessemer See page 53	**Bessemer Motor Truck Co., Grove City, Pa.**								
	Model G	1	4-3½x5	Continental	19.6	124	35x5P	35x5P	1825
	Model H-2	1½	4-3¾x5	Continental	22.5	144	36x3½	36x5	2445
	Model J-2	2½	4-4⅛x5¼	Continental	27.2	158	36x4	36x4D	3285
	Model K-2	4	4-4½x5½	Continental	32.4	175	36x5	36x10	4285
Bethlehem	Bethlehem Motor Corp., 40 E. Walnut St., Allentown, Pa.								
	Model K	1	4-3½x5	Own	19.6	125	34x4½	35x5	1695
	Model G	2	4-4 x5¼	Own	25.6	135	34x3½	34x5	2595
	Model H	3	4-4 x5¼	Own	25.6	143	36x4	36x8	3095
	Model J	4	4-4½x5½	Own	32.4	162	36x5	36x5D	3995
Birch	Birch Motor Cars, 81 E. Madison St., Chicago, Ill.								
	Model 37	1	4-3½x5	Gray	19.6	132	32x3½	32x4	1595
Brinton	Brinton Motor Truck Co., 5805 Market St., Philadelphia, Pa.								
	Model F	2½	4-4⅛x5¼	Continental	27.2	150	36x4	36x7	3400
Briscoe	Briscoe Motor Corp., Jackson, Mich								
	Model 4-34 (Open Del.)	1	4-3⅝x5	Own	18.2	109	31x4P	31x4P	....
Brockway	Brockway Motor Truck Co., Cortland, N. Y.								
	Model S-4	1½	4-3¾x5	Continental	22.5	140	36x3½	36x5	2250
	Model K-5	2½	4-4½x5¼	Continental	27.2	121, 148, 152, 176	36x4	36x7	3200
	Model R-4	3½	4-4½x5½	Continental	32.4	152, 164, 190	36x5	36x5D	4100
	Model T	5	4-4¾x6	Continental	36.1	160, 174, 204	36x6	40x6D	5250
	Camden Motors Corp.—See Frontmobile.								
Champion	Champion Motors Corp., Harrison Bldg., Philadelphia, Pa.								
	Model ½	½	4-3½x5	Lycoming	19.6	116	32x3½P	32x3½P	1325
Chevrolet	Chevrolet Motor Co., 224 W. 57th St., New York, N. Y.								
	Model T	1	4-3 11/16x5¼	Own	21.7	125	33x4P	35x5P	1325
	Model G	¾	4-3 11/16x4	Own	21.7	120	31x4	34x4½	920
	Model 490	½	4-3 11/16x4	Own	21.7	102	30x3½P	30x3½P	820
Chicago	Chicago Motor Truck, 335 W. 28th Pl., Chicago, Ill.								
	Model C1½	1½	4-3¾x5⅛	Hercules	22.5	144	36x3½	36x5	.....
	Model C2½	2½	4-4 x5⅛	Hercules	25.6	156	36x4	36x7	.....
	Model C3½	3½	4-4½x5½	Hercules	32.4	168	36x5	36x10	.....
	Model D5	5	5-4-4½x5½	Hercules	32.4	167	36x6	40x12	.....

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1½ Ton Truck

The Truck of Good Service

Motor—Continental, 3¾" x 5" stroke. Thermo-Syphon cooled.
Ignition—Two unit Starting, Lighting and Ignition system—together with Magneto and storage battery.
Rear Axle—Russell Internal Gear Drive.
Wheelbase—140 inches.
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Schwartz Motor Truck Corporation

Authorized Capital $1,500,000

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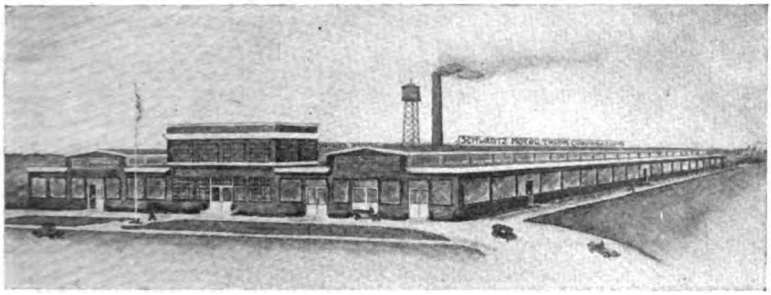

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Schwartz High Grade Heavy Duty Trucks

Worm — 1½ to 5 Tons — Double Reduction

With increased production in our new plant, we are closing additional territory for Schwartz Trucks. An agency for Schwartz Trucks is a valuable asset to any dealer. If you are an aggressive dealer and can handle a real proposition, write to the

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READING, PENNA.

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TRUCKS

1-1½,1½-2 Capacity

The Government purchased thousands of Commerce Trucks
Their tests established Commerce Stability

COMMERCE MOTOR CAR CO. — DETROIT MICH

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Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders, Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheelbase	Size of Tires Front	Size of Tires Rear	Price
Clydesdale	Clydesdale Motor Truck Co., Clyde, Ohio								
	Model 32C	1	4-3½x5⅛	Own	22.5	144	34x3½	34x5	$2375
	Model 42C	1½	4 4x5⅛	Own	25.6	146	36x4	36x6	2750
	Model 120C	5	4 4¾x6	Own	36.1	176	36x6	40x12	5500
	Model 90C	2½	4-4½x5½	Own	32.4	170	36x5	40x10	4400
	Model 65C	3½	4 4¼x5½	Own	28.8	163	36x4	36x7D	3540
Collier See page 41	**Collier Motor Truck Co., Bellevue, Ohio.**								
	Model 18	**1**	**4-3½x5**	**Continental**	**19.6**	**140**	**34x4**	**34x5**	.....
	Model 19	**1½**	**4-3¾x5**	**Continental**	**22.5**	**144**	**36x4**	**36x6**	**1850**
	Model 20	**2**	**4-4⅛x5¼**	**Continental**	**27.2**	**152**	**36x4**	**36x7**	.....
Columbia	Columbia Motor Truck & Trailer Co. Pontiac, Mich. Model F	1½	4 3¾x5	Continental	22.5	140	34x5P	38x7P	.....
	Model G	2½	4 4 x5¼	Hinkley	25.6	147	36x4	36x7	.....
Comet	Comet Automobile Co., 875-69 Garfield Ave., Decatur, Ill.								
	Model 1½	1½	4-3½x5	Lycoming	19.6	130	33x4	33x4	1950
Commerce See page 43	**Commerce Motor Car Co., Detroit, Mich**								
	Model T	¾	**4-3¾x5**	**Continental**	**22 5**	**127**	**34x4½P**	**34x4½P**	**1350**
	Model E	**1**	**4-3¾x5**	**Continental**	**22 5**	**126**	**35x5**	**35x5**	**1990**
	Model E P	**1½**	**4-3¾x5**	**Continental**	**22.5**	**134**	**36x6**	**36x6**	**2255**
Concord	Abbot-Downing Truck & Body Co., 8 Main St., Concord, N. H.								
	Model A	1½	4-4 x5½	Buda	25.6	140	36x3½	36x5	2800
	Model A-X	1½	4-4 x5½	Buda	25.6	.....	36x3½	36x5	2900
	Model B	2½	4-4¼x5¼	Buda	28.9	150	36x4	36x8	3400
	Model B-X	2½	4-4¼x5½	Buda	28.9	170	36x4	36x8	3400
Corbitt	Corbitt Motor Truck Co., Henderson, N.C.								
	Model E	1	4-3¾x5	Continental	22.5	130	34x3½	34x4	.....
	Model D	1½	4-3¾x5	Continental	22.5	140	36x3½	36x5	.....
	Model C	2	4-4⅛x5¼	Continental	27.2	148	36x3½	36x7	.....
	Model B	2½	4-4⅛x5¼	Continental	27.2	148	36x4	36x7	.....
	Model A	3½	4-4½x5½	Continental	32.4	178	36x5	36x10	.....
	Model A-A	5	4-4¾x6	Continental	36.1	178	36x6	40x6D	.....
Couple-Gear	Couple-Gear Freight-Wheel Co., 1450 Buchanan Ave., Grand Rapids, Mich.								
	Model H	3½	4-5 1/16x6	Wisconsin	42.0	144	36x4	36x4	6100
	Model A	5	4-5¾x7	Wisconsin	52.9	144	36x5	36x5	6700
	Model L. D	7	4-5¾x7	Wisconsin	52.9	144	36x6	36x6	7450
Crawford	Crawford Automobile Co., Surrey & Summit Aves., Hagerstown, Md.								
	Model	2	6-3½x5¼	Continental	29.4	144	34x4	34x6	2600
Dart	Dart Truck & Tractor Corp., Waterloo, Iowa.								
	Model S	1½	4-3¾x5⅛	Buda	22.5	140	34x3½	34x6	2250
	Model M	2½	4-4⅛x5½	Buda	28.9	150	36x4	36x7	3000
	Model W	3½	4-4½x6	Buda	32.4	160	36x5	36x10	4000
Day-Elder	Day-Elder Motors Corp., 120 Coit St., Irvington, N. J.								
	Model A	1	4-3¾x5	Continental	22.5	128	34x3½	34x4	2100
	Model B	1½	4-3¾x5	Continental	22.5	144	34x3½	34x5	2300
	Model D	2	4-4⅛x5¼	Continental	27.2	144 168	36x4	34x7	2750 2800
	Model C	2½	4-4¼x5½	Buda	28.9	150 165 156	36x4	36x7	2950 3000 3700
	Model F	3½	4-4½x5½	Continental	32.4	165 180	36x5	36x5D	3750 3800
	Model E	5	4-4½x6	Buda	32.4	162 170	36x5	40x6D	4600 4650
Dearborn See page 49	Dearborn Truck Co., Chicago, Ill.								
	Model 48	2	4-3¾x5⅛	Buda	22.5	148	34x4½P	34x7	2590
	Model F	1½	4-3¾x5	Buda	22.5	126	34x4	34x5	2180
Defiance	Defiance Motor Truck Co., Seneca St., Defiance, Ohio Model D	1½	4-3¾x5	Highway	22.5	140 160	35x5	36x6	2550
	Model E	2	4-3¾x5	Highway	22.5	140 160	35x5	38x7	2750

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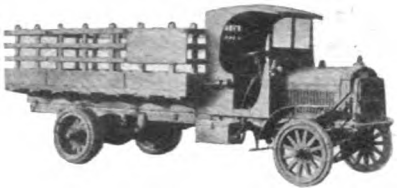

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All Worm Drive Models

Write for full information

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ROCHESTER, N. Y., U. S. A.

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NAPOLEON TRUCKS
Model 9, One Ton Capacity Chassis
Wheel base 133 inches
$1535

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Wheel base, 133 inches
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12 *Big Sales Points for You*

GRAY Overhead Valve Motor
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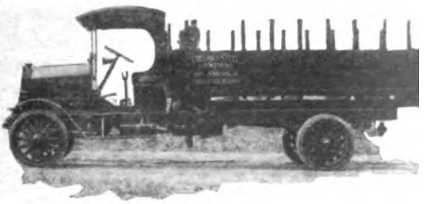

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Worm-Drive—2½, 3½, 5 ton

Sanford Service earns repeat orders. Get our attractive agents' contract. Some open territory.

Sanford Motor Truck Co
Syracuse, N. Y.

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Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheelbase	Size of Tires Front	Size of Tires Rear	Price
Denby See page 49	Denby Motor Truck Co., Detroit, Mich.								
	Model 33	1½	4-3¾x5	Continental	22.5	136	35x5P	38x7	$2300
	Model 134	2	4-3¾x5	Continental	22.5	144	36x3½	36x6	2800
	Model 25	3	4-4½x5¼	Continental	27.2	150	36x4	36x7	3600
	Model 27	4	4-4½x5½	Continental	32.4	170	36x5	36x5D	4600
	Model 210	5	4-4½x5½	Continental	32.4	170	36x6	40x6D	5350
Dependable See page 49	Dependable Truck & Tractor Co., Galesburg, Ill.								
	Model A	¾	4-3½x5	Herschell-Spill.	19.6	134	34x5P	36x6P	1650
	Model C	1½	4-3¾x5½	Buda	22.5	149	34x3½	34x5	2350
	Model D	2	4-4x5½	Buda	25.6	149	34x5	36x6	2650
	Model E	2½	4-4¼x5½	Buda	28.9	157	36x4	38x7	2950
	Model G	3½	4-4½x6	Buda	32.4	138 160	36x6	38x7	3550
Diamond	Diamond T. Motor Car Co., 4517 W. 26th St., Chicago, Ill.								
	Model T	1½	4-3¾x5¼	Hinkley	22.5	Opt.	36x3½	36x5	2450
	Model U	2	4-4 x5¼	Hinkley	25.6	Opt.	36x4	36x7	2835
	Model K	3½	4-4¼x5½	Hinkley	28.9	Opt.	36x5	36x5D	3925
	Model EL	5	4-4½x5½	Hinkley	32.4	Opt.	36x6	40x6D	4615
	Model S	5	4-4¾x6	Continental	36.1	Opt.	36x6	40x6D	4800
Dispatch	Dispatch Motor Car Co., 1200-14th Ave., S. E., Minneapolis Minn.								
	Model G	1	4-3¼x5	Wisconsin	16.9	120	34x4P	34x4P	.....
Doane	Doane Motor Truck Co., 428 Third St., San Francisco, Cal.								
	Model	2½	4-4¼x5¾	Waukesha	28.9	147	36x5	36x7	4100
	Model	3½	4-4⅜x5¾	Waukesha	30.6	172	36x5	36x5D	5100
	Model	6	4-5 x6¼	Waukesha	40.0	178	36x6	40x6D	6000
Dodge	Dodge Bros., 1678-1724 Jos. Campau Ave., Detroit, Mich.								
	Model	½	4-3⅞x4½	Own	24.0	114	33x4P	33x4P	1085
Dorris	Dorris Motor Car Co., 4100 Laclede Ave. St. Louis, Mo.								
	Model K-4	2	4-4¼x5½	Own	28.9	144 162 154	36x4	36x7	3400
	Model K-7	3½	4-4¼x5½	Own	28.9	174 194	36x5	36x10	4400
Double Drive	Double Drive Truck Co., 4826 W. Kinzie St., Chicago, Ill.								
	Model Four Wheel Drive B.	3	4-4¼x5½	Buda	28.9	130	36x6	36x6	4000
	Model Front Wheel Drive C.	1½	4-3¾x5¼	Buda	22.5	Opt.	34x5	34x4	2800
Douglas	Douglas Motors Corp., 30th & Sprague Sts., Omaha, Neb.								
	Model GW	1½	4-3¾x5¼	Weidely	22.5	130	34x3½	34x5	.....
	Model G	1½	4-3¾x5¼	Buda	22.5	130	34x3½	34x5	.....
	Model H	2	4-4¼x5½	Buda	28.9	136	34x4	36x7	.....
	Model I	3	4-4¼x5½	Buda	28.9	138	36x5	36x8	.....
Duplex	Duplex Truck Co., Washington & Mt. Hope Aves., Lansing, Mich.								
	Model E	3½	4-4¼x5¼	Buda	28.9	130	36x8	36x8	.....
	Model A	3	4-4 x5¼	Hinkley	25.6	145	35x5P	38x7P	.....
F. W. D. See page 53	Four Wheel Drive Auto Co., Dept. 120, Clintonville, Wis.								
	Model B	3	4-4¾x5½	Wisconsin	36.1	124	36x6	36x6	4900
Fageol	Fageol Motors Co., 107th Ave. & Hollywood Blvd., Oakland. Cal.								
	Model	1½	4-3¾x5¼	Waukesha	22.5	136 144	34x3½	34x6	3000
	Model	2½	4-4¼x5¾	Waukesha	28.9	172 154	34x4	36x7	3900
	Model	3½	4-4½x6¼	Waukesha	32.4	172 190	36x5	36x5D	5000
	Model	5	4-4½x6¼	Waukesha	32.4	154 172 190	36x6	40x6D	5700
Fageol See page 51	Fageol Motors Co. of Ohio, Cleveland, O.								
	Model	2½	4-4⅜x5¾	Waukesha	30.6	150 170 154	36x4	36x7	3900
	Model	3½	4-4½x6¼	Waukesha	32.4	172	36x5	40x5	4900

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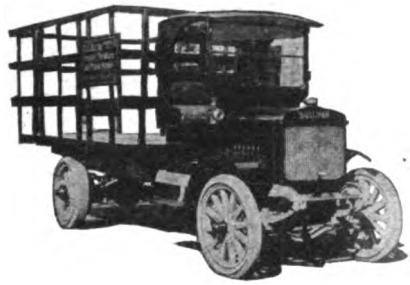
UNION
MOTOR TRUCKS

Union Motor Truck Company
BAY CITY MICHIGAN

Sullivan Motor Trucks
1½-2-3½ Ton
All Models Worm Driven



Highest Grade Units Used Throughout

Buda Motor
Bosch Magneto
Timken Front Axle
Ross Steering Gear
Stromberg Carburetor
Timken Worm Drive Rear Axle
Brown-Lipe Transmission
Brown-Lipe Clutch

Dealers invited to write for our proposition.

SULLIVAN MOTOR TRUCK CORP.
ROCHESTER NEW YORK

Traffic Truck
4000 lb. CAPACITY

chassis
$1595
factory

The lowest priced 4000-lb. capacity truck in the world

Specifications:

Red Seal Continental 3¾x5 motor; *Covert transmission;* multiple disc clutch; *Bosch magneto; Carter carburetor;* 4-piece cast shell, cellular type radiator; *Detroit Steel Products Springs; Standard and Thermoid* universal joints; drop forged front axle with *Timken roller bearings; Russel rear axle,* internal gear, roller bearings; semi-elliptic front and rear springs; *6-inch U-channel frame; Standard Fisk tires, 34x3½ front, 34x5 rear; 133-inch wheelbase; 122-inch length of frame behind driver's seat;* oil cup lubricating system; chassis painted, striped and varnished; driver's lazy-back seat and cushion regular equipment. Pneumatic cord tire equipment at extra cost.

DEALERS: There is some valuable territory available for dealers who realize the advantages of a direct factory connection.

Traffic Motor Truck Corp.
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TITAN

2½-Ton, 3½-Ton and 5-6 Ton

INTERNAL-GEAR DRIVE TRUCKS

SPECIFICATIONS

Buda Motor—Eiseman Magneto—Stromberg Carburetor.

Cotta Transmission, 4 speeds forward.

Clark Internal-Gear Rear Axle *with radius rods.*

Electric-Lights, Cab and Windshield are standard equipment—*no extra charge.*

TITAN TRUCK CO.
MILWAUKEE WISCONSIN

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Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders, Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheelbase	Size of Tires Front	Size of Tires Rear	Price
Famous	Famous Truck Co., 1001 Broad St., St. Joseph, Mich. Model B-10	1	4-3½x5	Continental	19.6	120	36x3½	36x4	....
	Model B-12	1½	4-3¾x5	Continental	22.5	138	36x3½	36x6	....
	Model B-20	2	4-3¾x5	Continental	22.5	138	36x4	36x6	
Fargo	Fargo Motor Car Co., 1164-66 W. 22d St., Chicago, Ill. Model R	2	4-3¾x5	Continental	22.5	140	36x4	36x6	.....
Federal	Federal Motor Truck Co., Federal & Campbell Sts., Detroit, Mich. Model SD	1	4-3¾x5	Continental	22.5	132	35x5P	36x6P	$2500
	Model TE	1½	4-4⅛x5¼	Continental	27.2	144	36x3½	36x5	2725
	Model UE	2	4-4⅛x5¼	Continental	27.2	156	36x4	36x7	3025
	Model WE	3½	4-4½x5½	Continental	32.4	156	36x5	36x5 D	3950
	Model XE	5	4-4½x5½	Continental	32.4	156	36x6	40x6 D	4600
Ford	Ford Motor Co., of Delaware (Highland Park), Detroit, Mich. Model T	1	4-3¾x4	Own	22.5	124	30x3P	32x3½P	545
Forschler	Forschler Motor Truck Mfg. Co., 120-40 N. Claiborne Ave., New Orleans, La. Model A	1	4-3½x5	Continental	19.6	120	34x3	34x4	.....
	Model AX	1½	4-3½x5	Continental	19.6	120	36x3½	36x5	.....
	Model B	2	4-4⅛x5¼	Continental	27.2	137	36x4	36x7	.....
	Model BX	3	4-4⅛x5¼	Continental	27.2	137	36x4	36x8	.....
	Four Wheel Drive Motor Truck Co.—See Success.								
Franklin	Franklin Mfg. Co., H. H., 101 W. Marcellus St., Syracuse, N. Y.	1	4-3⅜x5	Own	18.2	128	35x5	35x5	.....
Frontmobile	Camden Motors Corp., Park Avenue & White Horse Pike, Collingswood, N. J. Model F M	1½	4-3¼x5	Herschell-Spill	19.6	120	36x6	36x6	2600
G. M. C. See page 63	General Motors Truck Co., Pontiac, Mich. Model 16	1	4-3¾x5	Continental	22.5	132	35x5P	35x5P	.....
	Model 31	1½	4-3¾x5	Continental	22.5	130	36x3½	36x5	.....
	Mode 41	2	4-4⅛x5¼	Continental	27.2	158	36x4	36x7	.....
	Model 71	3½	4-4½x5½	Continental	32.4	187	36x5	40x5D	.....
	Model 101	5	4-4½x5½	Continental	32.4	187	36x6	40x6D	.....
Garford	Garford Motor Truck Co., Wapak Rd., Lima, Ohio. Model 25B	1¼	4-3¾x5⅛	.....	22.5	135	36x3½	36x4	.....
	Model 70 H	2	4-4¼x5½	.....	28.9	144	36x4	36x7	.....
	Model 77-D	3½	4-4½x6	.....	32.4	162	36x5	36x5D	.....
	Model 68D	5	4-5 x6½	.....	40.0	162	36x6	40x6D	.....
Gary See page 51	Gary Motor Truck Co., Gary, Ind. Model F	1	4-3¾x5	Buda	22.5	130	36x3½	36x4	2100
	Model GT	1½	4-4x5½	Buda	25.6	144	36x3½	36x5	2550
	Model J	2½	4-4¼x5½	Buda	28.9	148	36x4	36x7	3150
	Model KZ	3½	4-4½x6	Buda	32.4	162	36x5	40x5D	4150
	Model M	5	4-5 x6½	Buda	40.0	182	36x6	40x6D	5150
Geneva	Geneva Wagon Co., Geneva, N. Y. Model B	¾	2-5⅛x4½	Beaver	21.0	100	34x2P	36x3½P	700
Gersix	Gersix Mfg. Co., 800-04 Fairview Ave. N., Seattle, Wash. Model K	2½	4-4¼x5½	Buda	28.9	150	36x4	36x7	.....
	Model M	1½	4-4x5½	Buda	25.6	142	36x3½	36x6	.....
	Model L	3½	4-4½x6½	Buda	32.4	170	36x5	40x12	.....
Giant	Giant Truck Corp., Chicago Heights, Ill. Model 15 A	1½	4-3¾x5	Continental	22.5	138	34x4½	34x5	2250
	Model 16	2½	4-4⅛x5¼	Continental	27.2	144	36x5	36x7	3250
	Model 17	3½	4-4½x5½	Continental	32.4	176	36x6	36x10	4450
	Model 18	5	4-4½x5½	Continental	32.4	194	40x6	40x10	4350

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MOTOR TRUCKS

A BETTER—
TRUCK
SERVICE
DEALER PROPOSITION
CO-OPERATION

—THAN THE OTHERS
—WHY?
—WE WILL TELL YOU
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DETROIT

DEARBORN
TRUCKS

Represent today's ideal truck, combining light weight; dependable, economic service; low maintenance, and low price, all combining to give the

World's Lowest Hauling Cost

Here are some of the reasons

Buda Motor, Stromberg Carburetor, Bosch Magneto, Stewart Vacuum system, Fuller Clutch and Transmission, Standard Worm Axle, 148 inch wheel base. Write for details. Dept. T

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for all makes of cars.
Complete stock of parts

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Chicago, Illinois

Dependable
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TRUCKS and TRACTORS

Dependable Red Seal Trucks are the result of years of intensive study and experimenting to overcome the faults common in ordinary trucks.

The one weak place in so many trucks is in the face of the gears—they are too thin and easily break under extra stress. Anticipating this weakness we equip every Dependable Red Seal Truck with "extra wide face gears" of hardened steel.

It is not possible to explain in this space all the interesting details concerning Dependable Red Seal Trucks—so we ask you to send for our complete story. *Naturally you want a Dependable Truck.*

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The Highway Freighters

INDIANA Truck representatives have unlimited opportunities, because:

1. INDIANA worm-drive trucks are the best buy on the truck market today.
2. INDIANA Trucks give the largest possible returns on the investment. This has been proved by the performance records of INDIANA Trucks for ten years.
3. INDIANA representatives are assisted in every possible way to further the sale of INDIANA Trucks.

Write at once if you desire to become a member of our organisation.

INDIANA TRUCK CORPORATION
(Founded 1896)
MARION, INDIANA

INDIANA TRUCKS
"THE HIGHWAY FREIGHTERS"

Capacities: 1¼—2—2½—3½—5 Tons

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Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders, Bore and Strokes of Engine	Make of Engine	N.A.C.C. H.P.	Wheelbase	Size of Tires Front	Size of Tires Rear	Price
Gramm-Bernstein....	Gramm-Bernstein Motor Truck Co., Lima, Ohio.								
	Model 65.....	1½	4-3¾x5	Continental....	22.5	138	36x3½	36x5	$2725
	Model 15.....	1½	4-3¾x5	Continental....	22.5	138	36x3½	36x5	2050
	Model 20.....	2	4-4⅛x5¼	Continental....	27.2	144	36x4	36x7	3175
	Model 25.....	2½	4-4¼x5½	Hinkley.....	28.9	150	36x4	36x4D	3575
	Model 35.....	3½	4-4¼x5½	Hinkley.....	32.4	156	36x5	40x5D	4375
	Model 50.....	5	4-3¾x6	Continental....	36.1	168	36x6	40x6D	5275
	Model 30.....	3	4-4½x5½	Hinkley.....	32.4	150	36x6P	42x9	4575
	Model 10 (Speed Truck)		4-3½x5		19.6	129	33x5P	33x5P	1495
Hahn.....	Hahn Motor Truck Co., Third and Fourth Sts., Hamburg, Pa.								
	Model J4.....	1	4-3¾x5	Continental....	22.5	132	34x5P	34x5P	.....
	Model C. D.....	1½	4-4⅛x5¼	Continental....	27.2	155	36x6P	36x6P	.....
	Model D. E.....	2	4-4⅛x5¼	Continental....	27.2	165	36x6P	36x7	.....
	Model E. E.....	2½	4-4½x5½	Continental....	32.4	162	36x6P	36x8	.....
	Model F.....	3½	4-4½x5½	Continental....	32.4	191	36x5	36x10	.....
	Model F. E.....	5	4-4¾x6	Continental....	36.1	193	36x6	40x12	....
Hal-Fur	Hal-Fur Motor Truck Co., 1785 E. 21st Street, Cleveland, Ohio								
	Model B.....	2½	4-4¼x5½	Hinkley	28.9	156	35x5	36x7	3250
	Model C.....	1	4-4 x5½	Hinkley	25.6	136	35x5	38x5	2350
Hall.....	Lewis-Hall Motors Corp., Detroit, Mich.								
	Model.....	2½	4-4⅛x5¼	Continental....	27.2	144	36x4	36x4D	3275
	Model.....	3½	4-4½x5½	Continental....	32.4	144 / 180	36x5	36x5D	4100
	Model (Worm)	5	4-4½x5½	Continental....	32.4	144	36x5	40x6D	5100
	Model (Chain).....	7	4-4½x5½	Continental....	32.4	144	36x5	40x6D	5100
	Hamilton Motors Co.—See Apex.								
	Hare's Motors. — See Riker. Kelly-Springfield.								
	Harrisburg Mfg. & Boiler Co. — See Hurlburt.								
Harvey.....	Harvey Motor Truck Co., Harvey, Ill.								
	Model W. E. A.....	1½	4-4⅛x5½	Buda.....	27.2	128	34x3½	34x5	2350
	Model W. F. A.....	2½	4-4¼x5½	Buda.....	28.9	150	36x4	36x7	3300
	Model W. H. A.....	3½	4-4½x6	Buda.....	32.4	160	36x5	36x5D	4300
	Model W. K. A.....	5	4-4½x6	Buda.....	32.4	160	36x6	40x6D	5000
Hawkeye..... See page 51	Hawkeye Truck Co., Sioux City, Iowa.								
	Model K.....	1½	4-3¾x5¼	Buda.....	22.5	148½	34x3½	34x5	.....
	Model M.....	2	4-4¼x5½	Buda.....	28.9	148½	36x4	36x6	.....
	Model N.....	3½	4-4½x6	Buda.....	32.4	174	36x5	36x10	.....
Hewitt-Ludlow.....	Hewitt-Ludlow-Auto Co., 901-51 Indiana St., San Francisco, Cal.								
	Model.....	2	4-4⅛x5½	Buda.....	27.2	140	36x4	36x6	.....
	Model.....	2½	4-4¼x5½	Buda.....	28.9	150	36x4	36x7	.....
	Model.....	3½	4-4¼x5½	Buda.....	28.9	156	36x5	36x5D	.....
	Model.....	5	4-4½x6	Buda.....	32.4	168	36x6	40x6D	.....
Higrade.....	Higrade Motors Co., Harbor Springs, Mich.								
	Model A-18.....	1	4-3¾x5	Continental....	22.5	115	35x5	35x5	.....
	Model B-20.....	1½	4-4⅛x5½	Continental....	27.2	130	36x6	36x6	.....
Highway-Knight..... See page 51	Highway Motors Co., 106 W. Garfield Blvd., Chicago, Ill.								
	Model A.....	4	4-4 x6	Sleeve-Valve..	25.6	159	36x5	36x6D	.....
	Model B.....	5	4-4 x6	Sleeve-Valve..	25.6	162	36x5	40x6D	.....
Hoover	Hoover Wagon Co., York, Pa.								
	Model 15 B.....	¾	4-3½x5	Continental....	19.6	120	32x4P	33x4½P	1625
	Model 20 A.....	1½	4-3½x5	Continental....	19.6	132	34x4	33x5	2150
Huffman	Huffman Bros. Motor Co., Elkhart, Ind.								
	Model C.....	1½	4-3¾x5⅛	Buda.....	22.5	140	34x3½	34x6	1875
	Model B.....	1½	4-3¾x5	Continental....	22.5	140	34x3½	34x6	2075

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HAWKEYE
MOTOR TRUCKS

If you are interested in specifications—Hawkeye Trucks compare favorably with any Truck in America.

If you are interested in performance—Hawkeye Trucks can show you a very enviable record, wherever they have been introduced.

If you are interested in price—Hawkeye Trucks, while not the cheapest, retail at a very moderate price, for the quality of the truck.

We should welcome an opportunity to give you more information.

HAWKEYE TRUCK CO.
Manufacturers
Sioux City Iowa

FAGEOL
COMPOUND TRUCKS

91% More Pulling Power
36% More Road Speed

It's in the Gear Box

The Fageol—the truck with the compound transmission (patents pending)—is now ready for good dealers.

An unapproached range of power and speed, together with unusually low gasoline consumption gives this great truck tremendous selling advantages. It will be marketed through a limited number of high class dealers. Your territory may still be open.

Two Models—Medium and Heavy Duty

Fageol Motors Co. (of Ohio) Cleveland
Fageol Motors Co., Oakland, Cal.

HIGHWAY KNIGHT

2 Capacities, 4 and 5 Tons

Knight sleeve-valve motor, 4 cylinder 4x6 inch, flexibly mounted; force feed oiling through drilled crank-shaft; thermo syphon cooling; high tension magneto; electric starting and lighting; governor on carburetor; dry disc clutch; amidship transmission and clutch in one single demountable unit; cold pressed steel frame; worm-drive axle; oil lubrication throughout; wheel base 159 inches.

Prices on application

DEALERS WANTED—Write for Complete Data and Proposition

Highway Motors Company
CHICAGO Gen. Office, 105 W. Garfield Blvd. **ILLINOIS**

GARY

the 10-Test Truck

The Truck That Meets Your Requirements

Five Models

Write

Gary Motor Truck Co.
GARY, IND.

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Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity Tons	No. of Cylinders, Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheelbase	Size of Tires Front	Size of Tires Rear	Price
Hurlburt	Harrisburg Mfg. & Boiler Co., 19th and Derry Sts., Harrisburg, Pa.								
	Model A	1½	4-4x5½	Buda	25.6	148	34x4	34x5	$2850
	Model B	2½	4-4¼x5½	Buda	28.9	170	36x4	36x4	3750
	Model C	3½	4-4½x6	Buda	32.4	156, 170	36x5	36x5D	4590
	Model D	5	4-4½x6	Buda	32.4	156, 170	36x5	40x6D	5500
Independent	Independent Motor Co., 1636 Wilson Ave., Youngstown, Ohio								
	Model F	1½	4-3¾x5	Continental	22.5	140	36x3½	36x5	2585
	Model H	2½	4-4⅛x5¼	Continental	27.2	148	36x4	36x4D	3085
	Model K	3½	4-4½x5½	Continental	32.4	160	36x5	36x5D	4285
Independent	Independent Motor Truck Co., Second & Howell Sts., Davenport, Iowa.								
	Model B	1	4-3½x5	Continental	19.6	135	34x5	36x6	.....
	Model E	1½	4-3¾x5	Continental	22.5	141	34x3½	34x5	.....
	Model HI	2	4-4⅛x5¼	Continental	27.2	156	36x4	36x7	.....
Indiana See page 49	Indiana Truck Corp., Marion, Ind.								
	Model 12	1¼	4-3¾x5¼	Waukesha	22 5	134	34x3½	34x3½	2290
	Model 20	2	4-4⅛x5½	Own	27 2	150	36x4	36x7	2950
	Model 25	2½	4-4⅛x5½	Own	27.2	156	36x4	36x8	3150
	Model 35	3½	4-4⅛x5½	Own	30.6	160	36x5	36x5 D	3750
	Model 51	5	4-5 x6¼	Waukesha	40.0	170	36x5	40x6 D	4775
International	International Harvester Co., Harvester Bldg., Chicago, Ill.								
	Model H	¾	4-3½x5¼	Own	19.6	115	36x3½	36x3½	1850
	Model F	1	4-3½x5¼	Own	19.6	128, 146	36x3½	36x4	2050, 2100
	Model K	1½	4-3½x5¼	Own	19.6	128, 146	36x3½	36x5	2400, 2450
	Model G	2	4-4¼x5	Own	28.9	138, 164	36x4	36x6	2800, 2850
	Model L	3½	4-4¼x5	Own	28 9	160, 185	36x5	40x10	4500, 4750
	International Motor Co.—See Mack.								
Jackson	Jackson Motors Corp., Jackson, Mich.								
	Model C	3½	4-4½x5½	Continental	32.4	150	36x7	36x7	4250
Jones	Jones Motor Car Co., Wichita, Kans.								
	Model 31 A	1	4-3½x5	Continental	19.6	130	34x3	34x4	1495
Jumbo	Nelson Motor Truck Co., 1206 S Jefferson Ave., Saginaw, Mich.								
	Model 15	1½	4-3¾x5¼	Buda	22.5	144½	36x3½	36x5	2425
	Model 20	1½	4-3¾x5¼	Buda	22.5	144½	36x5	38x7	2675
	Model 25	2½	4-4¼x5½	Buda	28.9	152½	36x4	36x7	3090
	Model 30	2½	4-4¼x5½	Buda	28.9	152½	36x6P	42x9P	3590
	Model 35	3½	4-4½x6	Buda	32.4	165	36x5	36x10	4080
	Model 40	3½	4-4½x6	Buda	32.4	165	38x7P	44x10P	4830
Kalamazoo	Kalamazoo Motors Corp., Kalamazoo, Mich.								
	Model G1	1½	4-3¾x5	Continental	22.5	144	34x4	35x5	2800
	Model G2	1½	4-4¾x5	Continental	22.5	144	36x4	36x5	3100
	Model H	2½	4-4 x6	Wisconsin	25 6	160	36x4	36x8	3700
	Model K	3½	4-4¼x6	Wisconsin	28.9	160	36x4	36x5D	4300
Kelly-Springfield	Hare's Motors, 16 W. 61st St., New York, New York								
	Model K 31	1½	4-3¾x5½	Own	22.5	144	36x3½	36x6	3000
	Model K 34	1½	4-3¾x5½	Own	22.5	144	35x3½	36x6	3000
	Model K 35	2½	4-3¾x5½	Own	22.5	144	36x4	36x4D	3500
	Model K 36	2½	4-3¾x5½	Own	22.5	144	36x4	36x4D	3500
	Model K 40	3½	4-4½x6½	Own	32.4	150	36x5	40x5D	4400
	Model K 41	3½	4-4½x6½	Own	32.4	156	36x5	40x5D	4650
	Model K 42	3½	4-4½x6½	Own	32.4	156	36x5	40x5D	4650
	Model K 45	4	4-4½x6½	Own	32.4	150	36x5	40x6	4550
	Model K 50	5	4-4½x6½	Own	32.4	150	36x6	40x6D	5150
	Model K 60	6	4-4½x6½	Own	32.4	150	36x6	40x7D	5500

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FWD More Efficiency Less Bulk

The following comparisons with the FWD are based on averages exactly figured from the specifications of ten other leading makes of trucks.

	FWD	Average of 10 Standard rear drive trucks
Chassis Weight	6400 lbs.	7284 lbs.
Wheel Base	124 in.	161.4 in.
Over-all length	200 in.	243 in.
Width from hub to hub	70½ in.	83.8 in.
Body length allowance	148 in.	148 in.
Tread	56 in.	66.9 in.
Percentage of weight on rear axle—loaded	55%	80%
Tire surface of driving wheel in contact with road	24 in.	20 in.
Cost per complete tire replacement	$244.20	$312.30
Speed per mile on high	15 M.P.H	14 M.P.H.

Catalog on Request

Four Wheel Drive Auto Company
Dept. 120 Clintonville, Wisconsin
Canadian Factory: Kitchener, Ont.

BESSEMER TRUCKS

Built to Last

A Real Truck—Made up of real units of ample proportion that are built together.

□ □ □

A REPUTATION BUILT ON REPEAT ORDERS

□ □ □

BESSEMER MOTOR TRUCK CO.

GROVE CITY, PENNSYLVANIA

ACME TRUCKS

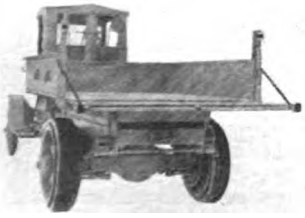
It is a significant fact that Acme dealers do a large repeat business.

So sturdy is the construction of Acme and so steady is its day-in-day-out performance that owners are invariably satisfied.

Write for the details of our valuable dealer franchise.

Built in ¾, 1, 1½, 2, 3½ and 5 ton models

ACME MOTOR TRUCK COMPANY
400 Mitchell St. Cadillac, Mich.



On the radiator of every Acme is this Seal of dependable performance

ACME THE TRUCK OF PROVED UNITS

Trade Mark registered U. S. and other countries

ATTERBURY

MOTOR TRUCKS OF MAXIMUM SERVICE

WE do not claim that the Atterbury is the "best motor truck"—

But we do know that there is no better truck built today.

Behind the Atterbury is a record of eleven years' satisfactory service to owners—the best evidence that the Atterbury Franchise is a paying investment.

Atterburys are made in 1½, 2½, 3½ and 5-ton capacities.

Atterbury Motor Car Co.
Buffalo, N. Y.

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Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders, Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheelbase	Size of Tires Front	Size of Tires Rear	Price
	Kentucky Wagon Mfg. Co.—See Old Hickory.								
Keystone	Keystone Motor Truck Corp., 42nd & Chestnut Sts., Philadelphia, Pa. Model 40	2	4-3¾x5⅛	Buda	22.5	144	34x5	38x7P	$2450
Kimball	Kimball Motor Truck Co., 1700 E. Ninth St., Los Angeles, Cal. Model AB	2	4-4 x6	Wisconsin	25.6	Opt.	36x4	36x7	.....
	Model AC	2½	4-4¼x6	Wisconsin	28.9	Opt.	36x4	36x8	.....
	Model AK	3	4-4½x6	Wisconsin	32.4	Opt.	36x4	36x10	.....
	Model AE	4	4-4¾x6	Wisconsin	36.1	Opt.	36x5	40x10	.....
	Model AF	5	4-5 x6	Wisconsin	40.0	Opt.	36x6	40x12	
Kissel	Kissel Motor Car Co., 400 Kissel Ave. Hartford, Wis. Model Gen. Utility	1½	4-3⅞x5½	Own	24.0	152	36x3½	36x5	2775
	Model Freighter	2½	4-4¼x5½	Own	28.9	168	36x4	36x7	3475
	Model Heavy Duty	4	4-4¼x5½	Own	28.9	168	36x5	36x5D	4475
	Model Goliath	5	4-4¼x5½	Own	28.9	180	36x6	36x6D	5085
Kleiber	Kleiber & Co., 11th & Folsom Sts., San Francisco, Cal. Model AA	1	4-4½x5¼	Continental	27.2	130	34x3½	34x5	
	Model A	1½	4-4½x5¼	Continental	27.2	143	36x3½	36x6	
	Model BB	2	4-4½x5¼	Continental	27.2	153	36x4	36x7	
	Model B	2½	4-4½x5½	Continental	32.4	160	36x5	36x8	
	Model C	3½	4-4½x5½	Continental	32.4	163	36x5	36x10	
	Model D	5	4-5¼x5¾	Continental	44.1	180	36x6	40x6D	
Knox	Knox Motors Associates, Springfield, Mass. Model 35	5	4-5 x5½	Own	40 0	108	36x4	38x6D	6000
	Model 36	5	4-5 x5½	Own	40.0	108	36x4	38x6D	6500
Koehler	Koehler Motors Corp., H. J., Llewellyn Ave., Bloomfield, N. J. Model C	1¼	4-3½x5	Herschell-Spill	19.6	132	34x3	34x5	1985
	Model M	2½	4-4 x5¼	Hercules	25.6	162	36x4	36x7	3365
	Model M. T.	5	4-4 x5⅛	Hercules	25.6	142	36x4	36x4	3450
L. M. C.	Louisiana Motor Car Co., Shreveport, La. Model 2—20	2½	4-4½x5¼	Continental	27.2	164	36x4	36x4 D	2950
	La France Truck Co.—See Ward La France.								
Lange	Lange Motor Truck Co., Fifth & Hamilton Aves., Pittsburgh, Pa. Model B	2½	4-4½x5¼	Continental	27.2	136	36x4	38x6	3000
Larrabee	Larrabee-Deyo Motor Truck Co., Washington St., Binghamton, N. Y. Model U	1½	4-3¾x5	Continental	22.5	138	34x3½	34x5	2400
	Model K	2½	4-4⅛x5¼	Continental	27.2	158	36x4	36x7	3400
	Model L	3½	4-4½x5½	Continental	32.4	176 / 160 / 186	36x5	36x5 D	4200
	Model W	5	4-4¾x6	Continental	36.1	185	36x5	40x6 D	5100
	Lewis-Hall Motors Corp.—See Hall.								
	Louisiana Motor Car Co.—See L. M. C.								
Luedinghaus Quality See page 41	Luedinghaus Quality Motor Trucks, Broadway, Howard to Mound Sts., St. Louis, Mo. Model K	2	4-4¼x5½	Waukesha	28.9	145	36x4 / 36x7P	36x7 / 40x8P	.....
	Model K-LS	2	4-4¼x5½	Waukesha	28.9	170	36x4 / 36x6P	36x7 / 40x8P	.....
Luverne	Luverne Automobile Co., Maple & McKenzie Sts., Luverne, Minn. Model	2	4-3¾x4¼	G. B. & S.	22.5	136	34x4	34x5	1900
	Model	3	6-3½x5¼	Continental	29.4	150	36x6P	38x7P	2500
Maccar	Maccar Truck Co., Gilligan St., Scranton, Pa. Model L	1½	4-4½x5¼	Continental	27.2	150	36x4	36x6	2925
	Model H	2½	4-4½x5½	Continental	32.4	162	36x4	36x4 D	3750
	Model M2	3½	4-4½x6	Wisconsin	32.4	174 / 186	36x5	36x5 D	4500
	Model G	5	4-4¾x6	Continental	36.1	186	36x5	40x6 D	5500

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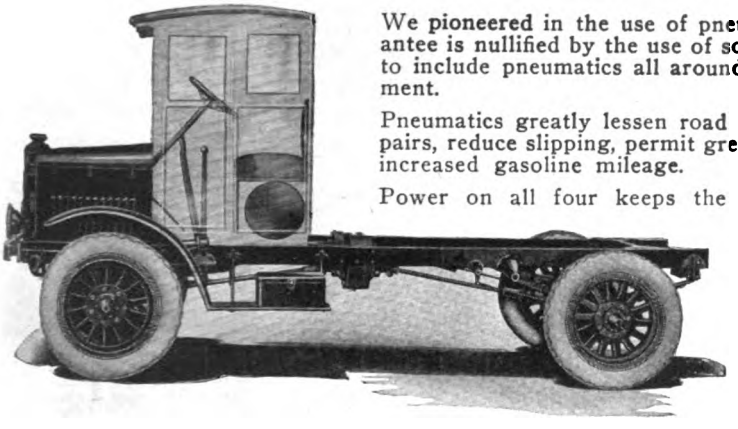
OSHKOSH 4-WHEEL-DRIVE MOTOR TRUCK

Designed and Built for the exclusive use of Pneumatic Tires

No Oshkosh 4-Wheel Drive Truck has ever been sold with any other tire equipment



We pioneered in the use of pneumatics. Our guarantee is nullified by the use of solids. We were first to include pneumatics all around as standard equipment.

Pneumatics greatly lessen road shocks, save on repairs, reduce slipping, permit greater speed, and give increased gasoline mileage.

Power on all four keeps the Oshkosh 4-Wheel-Drive Truck going, where other trucks stall, and yet gives operation costs that compare most favorably with the average rear drive truck.

SPECIFICATIONS

SPECIAL STANDARD EQUIPMENT

Tires—36x6-inch Pneumatic Cord truck type tires, front and rear, Goodyear All-Weather tread, or U. S. Nobby Cord tread, optional.

Demountable Rims—One extra.

Cab—Enclosed, all-weather, adjustable windows, rain vision windshield and with door on both sides. Seven-inch upholstering in seat and 4-inch upholstering in back. Inside seating width, 54 inches; distance from dash to back of seat, 43¼ inches. Open buck seat with same upholstery and measurements furnished if desired.

Starting and Lighting System—Northeast, 2-unit, starting generator built into the motor, conveniently located for inspection and is equipped with Bendix drive, built into fly-wheel housing. Only one wire leads from starting motor and generator, thus eliminating shorts, etc. Two Indiana lamps 8½ inches in diameter and tail lamp 8 inches in diameter are included.

Governor—Duplex, limits road speed to 22 miles an hour, but does not effect speed of motor for slow, strenuous pulling.

Vacuum System—Stewart-Warner.

Electric Warning Signal—Button on steering post.

Ammeter—Weston.

Speedometer—Stewart-Warner.

Bumper—4-inch channel steel.

Motor—Herschell-Spillman, 4-cylinder, cast en bloc; 3½-inch bore by 5-inch stroke; 3-point suspension. Excessive twisting of frame cannot bind motor or transmission. Oil capacity, two gallons.

Carburetor—Zenith. Choker on dash to permit easy and convenient starting.

Gasoline Tank—Capacity, 24 gallons. Located under driver's seat.

Ignition—North East distributor. Willard Heavy Duty Storage Battery. Magneto ignition optional.

Cooling System—Radiator, cast finn head, sides and bottom (own make). Spirex core. Thermo-syphon system.

Transmission—Brown-Lipe Model 25, 4 speeds forward and reverse. Multiple disk dry plate clutch in unit with motor. Transmission drive shaft, Merchant & Evans, with two universal joints to center transmission (own make), which has automatic locking equalizer which conveys power to front and rear axle through very heavy front and rear propeller shafts of equal length, both equipped with Peters' universal joints at both ends.

Axles—Own make. Conventional full floating type, bevel gear, front and rear, embodying our own patented driving and steering mechanism in the front axle. **Differentials**—Own design, built by Brown-Lipe.

Frame—A. O. Smith, 5-inch pressed steel with 3½-inch flange, ¼-inch gauge. Model AA chassis equipped with truss rod connections to give additional strength to center of frame.

Steering Gear—Ross irreversible. Adjustable wheel, 18 inches in diameter.

Control—Left-hand steer, center control. Spark and throttle controls located on steering post under wheel. Foot accelerator pedal.

Brakes—Service brake, external contracting, located in center of chassis in front of sub-transmission on drive shaft, breaking through sub-transmission on all four wheels with equal resistance. Brake drum, 8½-inch diameter, 3½-inch face. Emergency brakes external contracting, 14 inches in diameter, 3½-inch face, located on rear wheels.

Springs—Tuthill-Titanic. No center hole. Guaranteed forever against center breakage. Front, 44 inches long, 2½ inches wide. Rear, 50 inches long, 2½ inches wide. ⅞-inch bronze bushings. Spring clips, 3½-inch.

Wheels—Artillery type, 2-inch second growth hickory spokes, 14 to wheel, 10½-inch flange.

Turning Radius—26 feet either way.

Weight—Chassis with cab, 4,500 pounds.

Body allowance, 1,000 pounds.

Pay Load—4,000 pounds.

Chassis Measurements—

	Model A In.	Model AA In.
Wheel base	130	165
Length over all	194¼	229¼
Width over all	67½	67½
Height over all (top of cab)	96⅝	96⅝
From back of cab to rear end of frame	108⅝	143⅝
Tread	56	56
Frame width	34	34
Ground clearance (under differential front and rear)	10½	10½

Heavy Duty Truck Jack and Complete Set of Tools.

Color—Chassis, brown, black stripes. Cab, maroon, white stripes.

Price—Model A, $3,750.00. Model AA, $3,850.00, F. O. B. Oshkosh.

OSHKOSH MOTOR TRUCK MFG. CO., OSHKOSH, WIS.

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Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders, Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheelbase	Size of Tires Front	Size of Tires Rear	Price
Mack	International Motor Co., 252 W. 64th St., New York, N. Y.								
	Model AB (Chain)	1½	4-4 x5	Own	25.6	144 162	36x4	36x3½D	$3000
	Model AB (Chain)	2	4-4 x5	Own	25.6	144 162	36x4	36x4 D	3300
	Model AB (Dual Red.)	1½	4-4 x5	Own	25.6	144 162	36x4	36x3½	3450
	Model AB (Dual Red.)	2	4-4 x5	Own	25.6	144 162	36x4	36x4	3750
	Model AC	3½	4-5 x6	Own	40.0	156 168 180	36x5	40x5 D	4950
	Model AC	5	4-5 x6	Own	40.0	156 168 180	36x6	40x6 D	5500
	Model AC	6½	4-5 x6	Own	40.0	156 168 180	36x6	40x12	5750
	Model AC	7½	4-5 x6	Own	40.0	156 168 180	36x7	40x7 D	6000
Marvin	Marvin Truck Corp., 501 Bronson St., Kenosha, Wis.								
	Model 430	1½	4-3¾x5	Wisconsin	22.5	132	32x4	32x4	.....
	Model 450	2½	4-4 x5	Wisconsin	25.6	150	34x5	36x6	.....
Master	Master Trucks, 3132-36 Wabash Ave., Chicago, Ill.								
	Model J. W.	1½	4-4⅛x5½	Buda	27.2	142	34x3½	34x5	2690
	Model D	2½	4-4¼x5½	Buda	28.9	144	34x4	36x7	3540
	Model W	2½	4-4¼x5½	Buda	28.9	144	34x4	36x7	3290
	Model W. L.	2½	4-4¼x5½	Buda	28.9	170	34x4	36x7	3390
	Model D. L.	2½	4-4¼x5½	Buda	28.9	170	34x4	36x7	3640
	Model A	3½	4-4½x6	Buda	32.4	158	36x5	40x5 D	4190
	Model A. L.	3½	4-4½x6	Buda	32.4	194	35x5	40x5	4290
	Model E.	3½	4-4½x6	Buda	32.4	158	35x5	40x5 D	4640
	Model E. L.	3½	4-4½x6	Buda	32.4	194	35x5	40x5	4740
	Model B	5	4-4¾x6⅛	Buda	36.1	170	36x6	40x6D	5290
	Model B. L.	5	4-4¾x6½	Buda	....	194	36x6	40x6	5390
	Model F	5	4-4¾x6½	Buda	36.1	170	36x6	40x6D	5440
	Model F. L.	5	4-4⅛x6½	Buda	....	194	36x6	40x6 D	5540
	Model T	6	4-4¾x6½	Buda	28.9	110	34x4	36x4 D	3740
Maxwell See page 33	Maxwell Motor Sales Corp., Detroit, Mich.								
	Model 1920	1½	4-3⅝x4½	Own	21 0	124	35x5P	35x5P	1495
Menominee	Menominee Motor Truck Co., Broadway & Michigan St., Clintonville, Wis.								
	Model H. T.	1	4-3¾x5	Wisconsin	22.5	130	34x3½	36x5	2080
	Model H	1½	4-4 x5	Wisconsin	25.6	130 144	36x3½	36x5	2725
	Model D	2	4-4 x6	Wisconsin	25.6	144 160	36x4	36x4D	3245
	Model G	4	4-4½x6	Wisconsin	32.4	160 180	36x5	36x5D	4270
	Model J	5	4-4¾x6	Wisconsin	36.1	160 180	36x6	40x6 D	5450
Moreland	Moreland Motor Truck Co., 1701 N. Main St., Los Angeles, Cal.								
	Model 20 N	1	4-3¾x5	Continental	22.5	132	35x5P	36x6P	285
	Model 20 B	1½	4-4⅛x5¼	Continental	27.2	126	36x3½	36x6	312
	Model 20 C	2½	4-4½x5½	Continental	32.4	150 152	36x4	36x8	390
	Model 20 G	4	4-4¾x6	Continental	36.1	168 162	36x5	40x5D	497
	Model 20 J	5	4-4¾x6	Continental	36.1	186 186	36x6	40x6	535
Mutual	Mutual Truck Co., Sullivan, Ind.								
	Model 2A	2	4-4x6	Wisconsin	25.6	152	36x4	36x8	34
	Model 2 A. P.	2½	4-4x6	Wisconsin	25.6	152	38x7P	42x9P	41

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Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders, Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheelbase	Size of Tires Front	Size of Tires Rear	Price.
Napoleon See page 45	**Napoleon Motors Co., Traverse City, Mich.**								
	Model 9	1	4-3½x5	Gray (Victory)	19.6	133	32x3½P	32x4P	$153
	Model 11	1½	4-3½x5	Gray (Victory)	19.6	133	34x4	34x5	186
	Model 7 (Speed Truck)	¾	4-3½x5	Herschell-Spill.	19.6	120	33x4P	34x4	....
Nash	**Nash Motors Co., Kenosha, Wis.**								
	Model 2018	1	4-3¾x5¼	Own	22.5	130	34x3	34x4	....
	Model 3018	2	4-3¾x5¼	Own	22.5	144	34x4	34x6	....
	Model 4018 (Quad)	2	4-4¼x5½	Buda	28.9	124	36x5	36x5	....
	Nelson Motor Truck Co.—See Jumbo								
Nelson - LaMoon	**Nelson - LaMoon, 849-55 N. Kedzie Ave., Chicago, Ill.**								
	Model F1½	1½	4-4⅛x5¼	Continental	27.2	Opt.	36x3½	36x6	...
	Model F2½	2½	4-4⅛x5¼	Continental	27.2	Opt.	36x4	36x7	...
	Model F3½	3½	4-4½x5½	Continental	32.4	Opt.	36x5	36x5D	...
	Model F5	5	4-4¾x6	Continental	36.1	Opt.	36x6	40x6D	...
	New England Truck Co.—See Netco.								
Netco	**New England Truck Co., 86 Lunenburg St., Fitchburg, Mass.**								
	Model D	2	4-4⅛x5¼	Continental	27.2	144 / 168	36x4	36x7	..
	Model H	2½	4-4½x5½	Continental	32.4	168	36x4	36x8	..
New York	**Tegetmeier & Riepe Co., 771-73 First Ave., New York, N. Y.**								
	Model M	1½	4-4⅛x5¼	Continental	27.2	144	36x3½	36x5	
	Model N	2½	4-4⅛x5¼	Continental	27.2	144 / 162	36x4	36x4 D	
Noble	**Noble Motor Truck Corp., 8. Main St., Kendallville, Ind.**								
	Model A-21	1	4-3½x5	Lycoming	19.6	130	34x4½	35x5	.
	Model B30	1½	4-3¾x5¼	Buda	22.5	156	36x3½	36x5	.
	Model D50	2½	4-4¼x5½	Buda	28.9	150 / 162 / 176	36x4	36x8	.
	Model E70	3½	4-4½x6	Buda	32.4	166 / 182 / 196	36x5	36x10	
Northway	**Northway Motors Corp., 1 Beacon St., Boston, Mass.**								
	Model B2	2	4-4 x6	Own	25.6	146 / 161 / 178	36x4	36x8	
	Model B3	3½	4-4 x6	Own	25.6	160 / 185	36x5	40x10	
Northwestern	**Star Carriage Co., 2401 First Ave., S. Seattle, Wash.**								
	Model W	2	4-4⅛x5¼	Continental	27.2	164	34x4	36x7	
Norwalk	**Norwalk Motor Car Co., Martinsburg, W. Va.**								
	Model 25 E	1	4-3½x5	Lycoming	19.6	130	34x4P	34x4	
	Model 35 E	1½	4-3½x5	Lycoming	19.6	143	34x3½	34x5	
Ok	**Oklahoma Auto Mfg. Co., Okay, Okla.**								
	Model H I	1½	4-3¾x5¼	Buda	22.5	150	36x6	36x6	
	Model K I	1½	4-3¾x5¼	Buda	22.5	150	36x3½	36x5	
	Model L I	2½	4-4¼x5½	Buda	28.9	150	36x4	36x8	
	Model M I	3½	4-4½x6	Buda	32.4	160	36x5	36x5	
Old Hickory	**Kentucky Wagon Mfg. Co., Third & K Sts., Louisville, Ky.**								
	Model W	1	4-3¾x5	Continental	22.5	135	36x6P / 36x3½	36x6 / 36x4	
Old Reliable	**Old Reliable Motor Truck Co., 3921 S. Michigan Ave., Chicago, Ill.**								
	Model B	2½	4-4¼x6	Wisconsin	28.9	160	34x4	36x4	
	Model C	3½	4-4¼x6	Wisconsin	28.9	160	36x5	36x5	
	Model D	5	4-4¾x6	Wisconsin	36.1	168	36x6	40x6	
	Model K	7	4-4¾x6¼	Waukesha	36.1	136	36x6	40x7	
	Model M	7	4-4¾x6¼	Waukesha	36.1	124	36x6	40x7	
Oldsmobile	**Olds Motor Works, Lansing, Mich.**								
	Model T	1	4-3 11/16x5¼	Own	21.7	128	35x5P	35x	

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Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders, Bore and Stroke of Engine	Make of Engine	N. A. C. C. H. P.	Wheelbase	Size of Tires Front	Size of Tires Rear	Price
Oneida	Oneida Motor Truck Co., Webster & Willow Sts., Green Bay, Wis.								
	Model A 9	1¼	4-3x5¼	Own	22.5	135	36x3½	36x5	$233
	Model B 9	1¾	4-4x5¼	Own	25.2	144	36x3½	36x6	291
	Model C 9	2½	4-4x5¼	Own	25.2	160	36x4	36x7D	33
	Model D 9	3½	4-4½x5½	Own	32.4	170	36x5	36x10	43
	Model E 9	5	4-4½x5½	Own	32.4	180	36x6	40x12	54
Oshkosh See page 55	Oshkosh Motor Truck Mfg. Co., Oshkosh Wis.								
	Model A	2½	4-3½x5	Herschell-Spill.	25 6	130	36x6P	36x6P	..
	Model AA	2½	4-3½x5	Herschell-Spill.	19.6	165	36x6P	36x6P	..
Overland See page 21	Willys-Overland, Inc., Toledo, Ohio								
	Model (Panel) lbs.	800	4-3⅜x5	Own	18.2	104	31x4P	31x4P	....
	Model (Express) Delivery Wagon lbs.	800	4-3⅜x5	Own	18.2	104	31x4P	31x4P	....
	Model (Express) lbs.	1200	4-4⅛x4½	Own	27.2	106	33x4½P	33x4½P	....
Packard	Packard Motor Car Co. E. Grand Blvd. & Belt Line, Detroit, Mich.								
	Model EC		4-4 3/16x5½	Own	28.1	144	36x3½	36x6	3
	Model ED		4-4½x5½	Own	32.4	156	36x5	36x5	4
	Model EF		4-5 x5½	Own	40.0	156	36x6	40x6	5
	Model EX		4-4 3/16x5½	Own	28.1	144	36x6P	38x7P	4
	Model EY		4-5 x5½	Own	40.0	156	38x7P	44x10P	6
Packet	Packet Motor Car Mfg. Co., Minneapolis, Minn. Model 1 lbs	600	4-2¾x4	Own	12.1	92	28x3P	28x3P	..
Paige	Paige-Detroit Motor Car Co., Fort & McKinstry Sts., Detroit, Mich.								
	Model 52-19	1½	4-4x5¼	Hinkley	25.6	140	34x3½	34x5	
	Model 54-20	2½	4-4¼x5½	Hinkley	28.9	150	34x4	34x8	
	Model 51-18	3½	4-4½x5½	Hinkley	32.4	160	36x5	36x5D	
Parker	Parker Motor Truck Co., 608 Linus St., Milwaukee, Wis								
	Model F-20	2	4-4x6	Wisconsin	25.6	150	34x4	36x4	..
	Model J-20	3½	4-4½x6	Wisconsin	32.4	160	36x5	40x5D	..
	Model M-20	5	4-4¾x6	Wisconsin	36.1	160	36x6	40x6D	..
Patriot	Patriot Motors Co., Lincoln, Neb.								
	Model Revere	¾	4-3¾x5	Continental	22 5	128	35x5P	35x5P	.
	Model Lincoln	1½	4-4 x5¼	Hinkley	25.6	140	34x3½	36x3½	.
	Model Washington	2½	4-4½x5½	Hinkley	32.4	156	36x7	36x7	.
Piedmont	Piedmont Motor Car Co., Lynchburg, Va.								
	Model 4-35	1½	4-3½x5	Lycoming	19.6	128	34x4P	34x4	
Pierce-Arrow	Pierce-Arrow Motor Car Co., 1695 Elmwood Ave., Buffalo, N. Y.								
	Model 2	2	4-4 x5½	Own	25.6	150	36x4	36x4	
	Model 5	5	4-4⅞x6	Own	38.0	168	36x5	40x6D	
Power	Power Truck & Tractor Co., Beard & Goldsmith Aves., Detroit, Mich.								
	Model C	3½	4-4½x5½	Hinkley	32.4	168	36x5	36x 10	
Rainier	Rainier Motor Corp., Bay Side Ave. & L. I. R. R., Flushing, N. Y.								
	Model R-11	¾	4-3½x5	Continental	19.6	125	35x5	35x5P	
	Model R-19	1	4-3½x5	Continental	19.6	133	34x3½	32x4	
	Model R-16	1½	4-3¾x5	Continental	22.5	147	34x3½	34x5	
	Model R-18	2	4-4⅛x5	Continental	27.2	147	34x4	34x6	
	Model R-20	2½	4-4⅛x5¼	Continental	27.2	153 158 170	34x4	34x7	
	Model R-15	3½	4-4½x5¼	Continental	32.4	170	36x5	36x5	
	Model R.17	5	4-4½x5½	Continental	32.4	170	36x6	36x6D	
	Ralston Iron Works.—See Hewitt-Ludlow.								
Reliance	Reliance Motor Truck Co., Eighth St. & Pierce Ave., Appleton, Wis.								
	Model A-10	1½	4-4 x5	Buda	25.6	150	36x3½	36x5	
	Model B-20	2½	4-4¼x5½	Buda	28.9	156	36x4	36x5D	
Reo See page 21	Reo Motor Car Co. Lansing, Mich.								
	Model (Speed Wagon) lbs.	1500 2500	4-4⅛x4½	Own	27.2	128	34x4½P	34x4½	

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Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No of Cylinders, Bore and Stroke of Engine	Make of Engine	N. A. C. C. H. P.	Wheelbase	Size of Tires Front	Size of Tires Rear	Price
Republic	Republic Motor Truck Co., Alma, Mich.								
	Model 10E	1	4-3¼x5	Continental	22.5	124	35x5P	35x5P	$1655
	Model 11X	1½	4-3¾x5	Continental	22.5	144	34x3½	34x5	2195
	Model 19	2½	4-4⅛x5¼	Continental	27.2	144 168	36x4	36x7	2795
	Model 19W		4-4 x5¾	Waukesha	25.6	154	36x4	36x7	2795
	Model 20	3½	4-4½x5½	Continental	32.4	165	36x5	36x10	3845
Riker	Hare's Motors, 16 W. 61st St., New York, N. Y. Model B	3	4-4¼x6	Own	28.9	150 170 190	36x5	36x5D	4600 4600 4700
	Model BB	4	4-4¼x6	Own	28.9	150 170 190	36x5	36x6D	4700 4750 4800
Rock Falls	Rock Falls Mfg. Co., Sterling, Ill. Model 11 lbs.	2500	6-3½x5¼	Buda	29.4	150	35x5	35x5D	.....
Rowe	Rowe Motor Mfg. Co., Lancaster, Pa.								
	Model CW	1½	4-3¾x5	Wisconsin	22.6	133	36x6P	36x6P	.....
	Model CDW	2	4-4 x5	Wisconsin	25.6	140	34x4	36x3½D	.....
	Model HW	4	4-4¼x6	Wisconsin	28.9	158	36x5	36x6D	.....
	Model FW	5	4-4½x6	Wisconsin	32.4	170	36x6	40x6D	.....
	Model GPW	8	8-3¼x5	Model	33.8	170	38x7P	42x9P	.....
	Model GSW	3	4-4 x6	Wisconsin	25.6	158	34x5	36x5D	.....
Sandow	Sandow Motor Truck Co., 3333 W. Grand Ave., Chicago, Ill.								
	Model C	1	4-3½x5	Continental	19.6	120	34x3½	34x5	2095
	Model C G	1½	4-3¾x5	Continental	22.5	135	34x4	34x6	2490
	Model I	2	4-3¾x5	Continental	22.5	150	36x4	36x6	2575
	Model J	2½	4-4⅛x5¼	Continental	27.2	165	36x4	36x7	3175
	Model L M	3½	4-4½x5½	Continental	32.4	175	36x5	36x5D	.....
	Model L	5	4-4½x5½	Continental	32.4	175	36x6	40x6D	.....
Sanford See page 45	Sanford Motor Truck Co., Syracuse, N. Y.								
	Model W25	2½	4-4⅛x5¼	Continental	27.2	174	36x4	36x4	.....
	Model W35	3½	4-4½x5½	Continental	32.4	174	36x5	36x5D	.....
	Model W25	5	4-4½x5½	Continental	32.4	174	36x5	40x6D	.....
Schacht	Schacht Motor Truck Co., G. A., Eighth & Evans Sts., Cincinnati, Ohio.								
	Model	2	4-4¼x5¼	Buda	28.9	156	36x4	36x7	3550
	Model	2½	4-4¼x5½	Buda	28.9	156	36x4	36x4D	3850
	Model	3½	4-4¼x6	Buda	28.9	156 168 180	36x5	36x5D	4350
	Model	5	4-4½x6	Buda	32.4	156 168 180	36x5	40x6D	5350
Schwartz See page 43	Schwartz Motor Truck Corp., Reading, Pa Model B	1½	4-3¾x5¼	Buda	22.5	146	34x3½	34x6	2600
	Model CW	2½	4-4¼x5¼	Buda	28.9	132 150 168	36x4	34x8	3200
	Model DW	6	4-4½x6	Buda	32.4	156 170 186	36x6	40x12	4900
Selden See page 45	Selden Truck Corp., Rochester N. Y.								
	Model A	1½	4-4¾x5	Continental	22.5	137½	34x3½	34x5	.....
	Model A	2½	4-4⅛x5¼	Continental	27.2	145	36x4	36x7	.....
	Model A	3½	4-4½x5¼	Continental	32.4	162	36x5	36x10	.....
	Model A	5	4-4¾x6	Continental	36.1	164	36x6	40x12	.....
Seneca See page 27	Seneca Motor Car Co., Dept 127, Fostoria, Ohio Model M	½	4-3⅛x4½	LeRoi	15.6	108	30x3½P	30x3½P	1170
Service	Service Motor Truck Co., Grand St., Wabash, Ind.								
	Model 220	1	4-3½x5	Buda	19.6	137	34x3½	34x5	2415
	Model 31	1½	4-4x5½	Buda	25.6	150	36x3½	6x6	2985
	Model 36	1½	4-4¼x5½	Buda	28.9	150	35x5P	38x7P	3415
	Model 51	2½	4-4¼x5½	Buda	28.9	160½	36x4	36x7	3475
	Model 76	3½	4-4½x6	Buda	32.4	171	36x5	36x5D	4485
	Model 71	3½	4-4¼x5½	Buda	28.9	171	36x5	36x5D	4285
	Model 101	5	4-4½x6	Buda	32.4	171½	36x6	36x6D	5275
Shaw	Shaw Livery Co., Walden W. 5801 W. Dickens Ave., Chicago, Ill.								
	Model M2	¾	4-3¾x5	Continental	36.1	116	32x4	32x4	1975
	Model M4	1	4-3¾x5	Continental	36.1	130	35x5P	35x5P	2300

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Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufactu

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders, Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheelbase	Size of Tires Front	Size of Tires Rear
Signal	Signal Motor Truck Co., Charlevoix Ave. & Connors Rd., Detroit, Mich.							
	Model N. F	1	4-3¾x5	Continental	22.5	132	34x5P	36x6P
	Model H	1½	4-4⅛x5¼	Continental	27.2	144	34x4	36x6
	Model J	2½	4-4⅛x5¼	Continental	27.2	150	34x4	36x8
	Model J. L	2½	4-4⅛x5¼	Continental	27.2	180	34x4	36x8
	Model M	3½	4-4½x5½	Continental	32.4	168	36x5	40x5D
	Model M. L	3½	4-4½x5½	Continental	32.4	204	36x5	40x5D
	Model R	5	4-4¾x6	Continental	36.1	180	36x6	40x6
Southern	Southern Truck & Car Corp., Greensboro, N. C. Model 10	1	4-3½x5	Buda	19.6	130	34x3½	34x4
	Model 15	1½	4-3¾x5	Continental	22.5	144	34x3½	34x5
	Model 20	2	4-4¼x4½	Buda	28.9	150	36x4	36x7
Standard	Standard Motor Truck Co., 1111 Bellevue Ave., Detroit, Mich.							
	Model 1K	1	4-3¾x5	Continental	22.5	134	34x3	34x3½
	Model 76	2½	4-4⅛x5¼	Continental	27.2	140	36x4	36x7
	Model 66	3½	4-4½x5½	Continental	32.4	160	36x5	36x10
	Model 5K	5	4-4¾x6	Continental	36.1	164	36x6	40x12
	Star Carriage Co.—See Northwestern.							
Sterling	Sterling Motor Truck Co., 46th Ave. & Rogers St. (W. Allis), Milwaukee, Wis.							
	Model	1½	4-4x5¾	Own	25.6	142	36x3½	36x5
	Model	2	4-4x5¾	Own	25.6	142	36x4	36x6
	Model	2½	4-4⅜x5¾	Own	30.6	156	36x4	36x4D
	Model	3½	4-4½x6¼	Own	32.4	162	36x5	40x5D
	Model (Worm)	5	4-5x6¼	Own	40.0	168	36x6	40x6D
	Model (Chain)	5	4-5x6¼	Own	40.0	174	36x6	40x6D
	Model (Chain)	7½	4-5x6¼	Own	40.0	174	36x6	40x7D
Stewart See page 45	Stewart Motor Corp., Buffalo, N. Y. Model 11	¾	4-3⅛x4⅛	LeRoi	15.6	110	32x4P	32x4P
	Model 12	1	4-3½x5	Herschell-Spill	19.6	130	35x5	35x5
	Model 7	2	4-4⅛x5¼	Continental	27.2	156	34x4	34x7
	Model 7x	2½	4-4¼x5½	Buda	28.9	156	34x4	34x7
	Model 9	1½	4-3¾x5	Continental	22.5	140	34x3½	34x5
	Model 10	3½	4-4½x5½	Continental	32.4	165	36x5	36x5D
	Model 10x	3½	4-4½x6	Buda	32.4	165	36x5	36x5D
Stoughton	Stoughton Wagon Co., Stoughton, Wis. Model A	1	4-3¾x5¼	Waukesha	22.5	130	34x4½	35x5
	Model B	1½	4-3¾x5¼	Waukesha	22.5	140	36x3½	36x5
	Model D	2	4-4 x5⅛	.....	25.6	140	36x4	36x7
	Model F	3	4-4¼x5⅛	.....	28.9	155	36x5	36x5D
Success	Webberville Truck Co., Webberville, Mich. Model B	2	4-4⅛x5¼	Continental	27.2	144	34x4	36x7
Sullivan See page 47	Sullivan Motor Truck Corp., Rochester, N. Y. Model E	2	4-4¼x5½	Buda	28.9	150	36x4	36x6
	Model H	3½	4-4½x6	Buda	32.4	170	36x5	36x5D
Super	O'Connell Motor Truck Co., Waukegan, Ill. Model 40	2	4-3¾x5¼	Waukesha	22.5	156	36x4	36x7
	Model 50	2½	4-4 x6	Wisconsin	25.6	156	36x4	36x8
	Model 70	3½	4-4¼x5¾	Wisconsin	28.9	164	36x5	40x5
	Model 100	5	4-4¾x6	Wisconsin	36.1	164	36x5	40x6D
Superior	Superior Motor Truck Co., 22 Stewart Ave., Atlanta, Ga.							
	Model D	1	4-3¾x5	Continental	22.5	124	34x4½P	34x4
	Model E	2	4-4⅛x5¼	Continental	27.2	144	36x4	36x6
	Tegetmeier & Riepe Co.—See New York.							
T.C.A.W.D	Twin City Four Wheel Drive Co., 2482-96 University Ave., St. Paul, Minn.							
	Model B	3½	4-5⅛x6	Wisconsin	42.0	140	36x6	36x6
	Model A	5	4-5⅛x6½	Wisconsin	42.0	140	36x7	36x7

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Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders, Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheelbase	Size of Tires Front	Size of Tires Rear	Price
Tiffin	Tiffin Wagon Co., Harrison St., Tiffin, Ohio.								
	Model F. 15	1½	4-1⅛x5¼	Continental	27.2	135	36x3½	36x5	.....
	Model F. 25	2½	4-1⅛x5¼	Continental	27.2	148	36x4	36x3½D	.....
	Model F. 35	3½	4-1½x5½	Continental	32.4	160	36x5	40x5D	.....
	Model F. 50	5	4-4¾x6	Continental	36.1	168	36x6	40x6D	.....
	Model F. 60	6	4-4¾x6	Continental	36.1	168	36x6	40x12	.....
Titan See page 47	Titan Truck Co., Milwaukee, Wis.								
	Model	3½	4-4½x6	Buda	32.4	162	36x5	40x5D	$4300
	Model	6	4-4½x6	Buda	32.4	156	36x6	40x6D	5150
Tower	Tower Motor Truck Co., W. Grove St., Greenville, Mich.								
	Model J	1½	4-1⅛x5¼	Continental	27.2	142	35x5P	38x7	3000
	Model H	2½	4-1⅛x5¼	Continental	27.2	146	36x4	36x7	3475
	Model G	3½	4-4½x5¼	Continental	32.4	165	36x5	36x10	4400
Traffic See page 47	Traffic Motor Truck Corp. St. Louis, Mo.								
	Model C	2	4-3¾x5	Continental	22.5	133	34x4	34x5	1595
Transport	Transport Truck Co., Mt. Pleasant, Mich								
	Model 20	1	4-3¾x5⅛	Buda	22.5	130	34x3½	34x4	1850
	Model 30	1½	4-3¾x5	Continental	22.5	140	36x3½	36x5	2250
	Model 50	2	4-4¼x5¼	Buda	28.9	150	36x4	36x7	2785
	Model 70	3½	4-4½x6	Buda	32.4	170	36x5	36x10	4195
Traylor	Traylor Engineering & Mfg. Co., [Truck & Traction Div.], Cornwells, Pa.								
	Model B	1¼	4-3¾x5⅛	Buda	22.6	132	34x3½	34x5	2075
	Model C	2	4-4 x5½	Buda	25.6	138	36x4	36x7	2875
	Model D	3	4-4¼x5½	Buda	28.9	150	36x4	36x8	3375
Triangle	Triangle Motor Truck Co., St. Johns, Mich								
	Model AA	¾	4-3¼x5	Herschell-Spill	16.9	115	35x5l	35x5P	1600
	Model A	1½	4-3¾x5¼	Waukesha	22.5	144	34x3½	34x6	2250
	Model B	2½	4-4x5¾	Waukesha	25.6	151	36x4	36x7	2950
	Model C	4	4-3¾x5¾	Waukesha	22.5	147	36x4	36x6	2700
Triumph	Triumph Truck & Tractor Co., 110-16 Southwest Blvd., Kansas City, Mo.								
	Model H B	2	4-3¾x5¼	Buda	22.5	144	36x3½	36x5	.....
	Model H	1½	4-3¾x5¼	Buda	22.5	144	36x4	36x7	.....
	Model HC	1½	4-3¾x5¼	Buda	22.5	144	36x3½	36x5	.....
	United Four Wheel Drive Truck Corp.—See Allfour.								
U. S.	United States Motor Truck Co., 17th St. & Madison Ave., Covington, Ky.								
	Model E	2½	4-1⅛x5¼	Continental	27.2	144 / 168	34x4	36x4D	.....
	Model R	2½	4-4x5¼	Hinkley	25.6	156	34x4	36x8	.....
	Model S	3½	4-4½x5½	Hinkley	32.4	168 / 174	36x5	36x10	.....
	Model T	5	4-4¾x6½	Hinkley	36.1	172	36x6	40x12	.....
	Model N	1½	4-3¾x5	Continental	22.5	144	36x3½	36x5	
Ultimate	Vreeland Motor Co., 407-09 Elizabeth Ave., Newark, N. J.								
	Model A	1½	4-4 x5½	Buda	25.6	140	36x3	36x6	.....
	Model AJ	1½	4-4 x5½	Buda	25.6	140	35x6	36x5	.....
	Model B	2½	4-4¼x5½	Buda	28.9	154	36x4	36x8	.....
	Model BL	2½	4-4¼x5½	Buda	28.9	178	36x4	36x8	.....
Union See page 47	Union Motor Truck Co., Bay City, Mich.								
	Model F	2½	4-4 x6	Wisconsin	25.6	152	36x5	36x8	3150
	Model H	4	4-4½x6	Wisconsin	32.4	171	36x6	36x10	3975
	Model J	6	4-5 x6	Wisconsin	40.0	193	36x6	40x14	5450
United	United Motors Co., 675 North St., N. W., Grand Rapids, Mich.								
	Model A	1½	4-3¾x5½	Buda	22.5	145	34x3½	34x5	2445
	Model B	2½	4-4¼x5½	Buda	28.9	151 / 171	36x4	36x7	3150
	Model C	3½	4-4¼x5½	Buda	28.9	157 / 177	36x5	36x5D	3975
	Model V	5	4-4½x6	Buda	32.4	160 / 185	36x5	40x6D	5100
Velie See page 23	Velie Motors Corp., 109 Velie Place, Moline, Ill.								
	Model 46	1½	4-3¾x5	Continental	22.5	133	36x3½	36x5	2200

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Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders, Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheelbase	Size of Tires Front	Size of Tires Rear	Price
Vim	Vim Motor Truck Co., Roberts Ave & Fox St., Philadelphia, Pa.								
	Model 29	½	4-3⅛x4½	Own	15.6	108	31x4P	31x4P	$13
	Model 31	1	4-3¾x5⅛	Hercules	22.5	125	35x5P	35x5P	24
	Model 22	2	4-3¾x5⅛	Hercules	22.5	142	36x5	36x6	31
	Model 23	3	4-4¼x5½	Hercules	28.9	175	36x5	36x5D	36
	Vreeland Motor Co.—See Ultimate.								
Walter See page 41	Walter Sales Co., 605 Fifth Ave., New York, N. Y.								
	Model S	5	4-4½x6¼	Waukesha	32.4	168	36x6	40x6 D	5
Ward La France See page 63	La France Truck Corp., Elmira, N. Y.								
	Model 2B	2½	4-4⅜x5¾		30.6	158, 170, 182	36x4	36x7	
	Model 4A	3½	4-4⅞x6¼		32.4	162, 188	36x5	36x5D	
	Model 5A	5	4-5 x6¼		40.0	164, 190	36x6	40x6D	
Watson	Watson Products Corp., Canastoto, N.Y.								
	Model B	¾	4-3¾x5¼	Waukesha	22.5	128	34x4½	34x4½	
	Model N	3½	4-4½x5½	Continental	32.4	168	36x5	36x10	
	Webberville Truck Co.—See Success.								
Western	Western Truck Mfg. Co., 122 N. Curtis St., Chicago, Ill.								
	Model C	2	4-4⅛x5¼	Continental	27.2	146	36x4	36x6	
	Model F	3	4-4⅛x5¼	Continental	27.2	158	36x4	36x7	
	Model T	7	4-4¾x5½	Wisconsin	36.1	146	36x6	40x7D	
White	White Co., 6611 Euclid Ave., Cleveland, Ohio.								
	Model 15	¾	4-3¾x5⅛	Own	22.5	133	34x5P	34x5P	
	Model 20	2	4-3¾x5⅛	Own	22.5	157	37x5P, 36x4	36x4D, 36x7	
	Model 40	3	4-3¾x5¾	Own	22.5	174	36x5	40x5D	
	Model 45	5	4-4¼x5¾	Own	28.9	174	36x6	40x6D	
White Hickory	White Hickory Motor Corp., 141 Marietta St., Atlanta, Ga.								
	Model E	1	4-3¾x5	Continental	22.5	124	34x5	34x5	
	Model H	1½	4-3¾x5	Continental	22.5	144	36x3½	36x5	
	Model K	2½	4-4⅛x5¼	Continental	27.2	150	36x4	36x7	
Wichita	Wichita Motors Co., Wichita Falls, Texas								
	Model K	1	4-3½x5	Waukesha	19.6	144	36x3	36x4	
	Model L	1½	4-3½x5	Waukesha	19.6	144	36x3½	36x5	
	Model M	2	4-3¾x5	Waukesha	19.6	144	36x3½	36x6	
	Model R	2½	4-3¾x5	Waukesha	19.6	144	36x4	36x7	
	Willys-Overland, Inc.—See Overland.								
Wilson	Wilson Co., J. C., 15th & Warren Aves., Detroit, Mich.								
	Model F	1½	4-3¾x5⅛	Continental	22.5	140	36x3½	36x5	
	Model EA	2½	4-4 x5⅛	Continental	25.6	152	36x4	36x7	
	Model G	3½	4-4¼x5½	Continental	28.9	160	36x5	36x5D	
	Model H	5	4-4¼x5½	Continental	32.4	160	36x6	40x6 D	
Winther See page 39	Winther Motor Truck Co. Kenosha Wis.								
	Model 751	1	4-3½x5	Herschell-Spill.	19.6	135	34x4½	35x5	
	Model 39	1½	4-3¾x5	Wisconsin	22.5	140	34x3½	34x5	
	Model 430	1½	4-3¾x5	Wisconsin	22.5	132	32x4	32x4	
	Model 49	2	4-4 x5	Wisconsin	25.6	150	34x4	34x4D	
	Model 450	2½	4-4 x5	Wisconsin	25.6	150	34x4	34x6	
	Model 70	3½	4-4 x6	Wisconsin	25.6	150	36x5	36x5D	
	Model 109	5	4-4½x6	Wisconsin	32.4	162	36x5	40x6D	
	Model 140	7	4-5 x6	Wisconsin	40.0	162	36x6	40x7D	

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Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address		Load Capacity, Tons	No. of Cylinders, Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheelbase	Size of Tires Front	Size of Tires Rear	Price
Witt-Will	Witt-Will Co., 52 N. St., N. E., Washington, D. C.	Model N	1½	4-3¾x5	Continental	22.5	120 144	36x3½	36x4	$2250
		Model E	1½	4-3¾x5	Continental	22.5	122	36x3½	36x5	2250
		Model P	2½	4-4⅛x5¼	Continental	27.2	144 144 162	36x3½	36x7	3250
		Model P	2	4-4⅛x5¼	Continental	27.2	144	36x3½	36x7	3250
Wolverine See page 43	American Commercial Car Co., Detroit Mich.	Model C	1½	4-3¾x5	Continental	22.5	140	34x3½	34x5	2380
		Model D	2	4-3¾x5	Continental	22.5	148	34x4	34x3½	2650

Electric Commercial Vehicles

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address		Load Capacity Tons	Make of Battery	Wheel Base	Size of Tires Front	Size of Tires Rear	Price
C. T.	Commercial Truck Co., 825 N. 27th St., Philadelphia, Pa.	Model	½	Opt	89¼	36x6	36x3	.....
		Model	1	Opt	101	36x3½	36x4	.....
		Model	2	Opt	116	36x4	36x4D	.....
		Model	3½	Opt	122	36x6	36x4D	.....
		Model T. R. W. D.	3½	Opt	126	36x5	36x5D	.....
		Model	5	Opt	132	36x7	36x5D	.....
Ehrlich	Ehrlich Electric Construction Co., 1807 Walnut St., Chicago, Ill.							
		Model 1002A	1	Edison	94	36x3	36x3½	.....
		Model 1002D	1½	Edison	108	36x4	36x5	.....
		Model 1002G	2	Edison	120	36x5	36x6	.....
		Model 1002F	3	Edison	120	36x6	36x7	.....
Lansden	Lansden Co., Power St., Danbury, Conn.	Model BB	½	Edison Exide	94	34x4P	34x4P	.....
		Model M	1	Edison Exide	108	36x3	36x3½	.....
		Model M	2	Edison Exide	121	36x4	36x3 D	.....
		Model M	3½	Edison Exide	133	36x5	36x4D	.....
Oneida	Oneida Motor Truck Co., Webster & Willow Sts., Green Bay, Wis.							
		Model 2E	2	Opt	111	36x4	36x7	.....
		Model F-E	5	Opt	141	36x6	40x12	.....
		Model (Special)	¾	Opt	96	36x3	36x3½	.....
Walker	Walker Vehicle Co., State and 87th Sts., Chicago, Ill.	Model M	½	Opt	93	34x3	36x3½	.....
		Model K	1	Opt	96	34x3½	36x4	.....
		Model L	2	Opt	112	38x4	38x6	.....
		Model P	3½	Opt	131	36x5	38x5D	.....
		Model N	5	Opt	141	36x6	38x6D	.....
Ward	Ward Motor Vehicle Co., S. Fulton Ave., Mt. Vernon, N. Y.	Model W-S. 2 lbs.	750	Opt	88	32x3	32x3	.....
		Model W-A lbs.	1250	Opt	90	32x3	34x3½	.....
		Model W-B	1	Opt	102	34x3½	36x4	.....
		Model W-D	2	Opt	114	36x4	36x7	.....
		Model W-F	3½	Opt	132	36x5	36x8	.....
		Model W-H	5	Opt	144	36x7	40x10	.....

Electric Industrial Trucks & Tractors

Automatic Transportation Co...2933 Main St., Buffalo, N. Y.
Baker R. & L. Co. (See Page 29).....Cleveland, Ohio
Industrial Truck Co. (Div. Cowan Truck Co.).Holyoke, Mass.
Crescent Truck Co.....347-49 First Ave., Elizabeth, N. J.
Elwell-Parker Co.....4223 St. Clair Ave., Cleveland, Ohio
Hunt Co., C.W....5629 Richmond Ter. W. New Brighton, N.Y
Karry-Lode Industrial Truck Co.....
.....98-100 Mott Ave., Long Island City, N. Y.
Koppel Industrial Car & Equipment Co.....Koppel, Pa.
Lakewood Engineering Co.....Berea Rd. Cleveland, Ohio
Lansing Co.....Lansing, Mich.
Mercury Mfg. Co.....4118 S. Halsted St., Chicago, Ill.
Ross Carrier Co., Second & Miller Sts., Benton Harbor, Mich.

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Tractors

Brief Specifications, Prices and Names and Addresses of Manufactu

Model No. or Name	Manufacturer's Name and Address	Type of Traction	Make of Engine	No. of Cylinders Bore and Stroke of Engine	N.A.C.C. H.P.	Fuel
Adams	Adams Co., Marysville, Ohio	Wheel	.....	1-9-13	....	Gasoline Kerosene
Advance-Rumely Oil Pull 12-20	Advance-Rumely Thresher Co., LaPorte, Ind	Wheel	Own	2-6x8	31.2	Kerosene
Advance-Rumely Oil Pull 16-30	Advance-Rumely Thresher Co., LaPorte, Ind	Wheel	Own	2-7x8½	39.2	Kerosene
Advance-Rumely Oil Pull 20-40	Advance-Rumely Thresher Co., LaPorte, Ind	Wheel	Own	2-8x10	51.2	Kerosene
Advance-Rumely Oil Pull 30-60	Advance-Rumely Thresher Co., LaPorte, Ind	Wheel	Own	2-10x12	16.1	Kerosene
	Agrimotor Mfg. Co.—See Mid-West.					
Allis-Chalmers 6-12 General Purpose	Allis-Chalmers Mfg. Co., Milwaukee, Wis	Wheel	LeRoi	4-3½x4½	15.6	Gasoline
Allis-Chalmers, 18-30	Allis-Chalmers Mfg. Co., Milwaukee, Wis	Wheel	Own	4-4¾x6½	36.1	Gasoline Kerosene
Allwork I	Electric Wheel Co., 28th & Cedar Sts., Quincy, Ill	Wheel	Own	4-5 x6	40.0	Kerosene
Allwork II	Electric Wheel Co., 28th & Cedar Sts., Quincy, Ill	Wheel	Own	4-4¾x6	36.1	Kerosene
	American Tractor Foundry & Mfg. Co.—See Royer					
Appleton 12-20	Appleton Mfg. Co., Batavia, Ill	Wheel	Buda	4-4¼x5½	28.9	Gasoline Kerosene
Aultman-Taylor 30-60	Aultman & Taylor Machinery Co., Mansfield, Ohio	Wheel	Own	4-7x9	78.4	Gasoline Kerosene
Aultman-Taylor 22-45	Aultman & Taylor Machinery Co., Mansfield, Ohio	Wheel	Own	4-5½x8	48.4	Gasoline Kerosene
Aultman-Taylor 15-30	Aultman & Taylor Machinery Co., Mansfield, Ohio	Wheel	Climax	4-5x6½	40.0	Gasoline Kerosene
Automotive B-3	Automotive Corporation, Oakdale and Tracy Sts., Toledo, Ohio	Wheel	Hercules	4-4 x5½	25.6	Gasoline
Avery 8-16	Avery Co., 949 Iowa St., Peoria, Ill	Wheel	Own	2-5½x6	24.2	Gasoline Kerosene Distillate
Avery 12-25	Avery Co., 949 Iowa St., Peoria, Ill	Wheel	Own	2-6½x7	33.8	Gasoline Kerosene Distillate
Avery 14-28	Avery Co., 949 Iowa St., Peoria, Ill	Wheel	Own	4-4½x7	34.2	Gasoline Kerosene Distillate
Avery 18-36	Avery Co., 949 Iowa St., Peoria, Ill	Wheel	Own	4-5½x6	48.4	Gasoline Kerosene Distillate
Avery 25-50	Avery Co., 949 Iowa St., Peoria, Ill	Wheel	Own	4-6½x7	67.6	Gasoline Kerosene Distillate
Avery 40-80	Avery Co., 949 Iowa St., Peoria, Ill	Wheel	Own	4-7¾x8	96.8	Gasoline Kerosene Distillate
Avery B	Avery Co., 949 Iowa Street, Peoria, Ill	Wheel	Own	4-3 x5	14.4	Gasoline Kerosene
Avery C	Avery Co., 949 Iowa Street, Peoria, Ill	Wheel	Own	6-3 x4	21.6	Gasoline Kerosene
	Baskus Tractor Co.—See Baby Savidge.					
Bates Steel D	Bates Machine & Tractor Co., Henderson & Jackson Sts., Joliet, Ill	Crawler	Erd	4-4 x6	25.6	Kerosene
Baby Savidge	Baskus Tractor Co., 917 E. Broadway, Alton, Ill	Wheel	Gray (Vlet'y)	4-3½x5	19.6	Gasoline
Bean Track Pull	Bean Spray Pump Co., 217 W. Julian St., San Jose, Cal	Crawler	Own	4-3¾x4	24.0	Kerosene
Beeman F	Beeman Tractor Co., 311 Sixth Ave., S., Minneapolis, Minn	Wheel	Own	1-3½x4½	4.9	Gasoline
Beltrail B	eltrail Tractor Co., 2237 Hampden Ave., St. Paul, B Minn	Crawler	Waukesha	4-3¾x5¼	22.5	Gasoline Distillate

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Tractors—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Type of Traction	Make of Engine	No. of Cylinders Bore and Stroke of Engine	N.A.C.C H.P.	Fuel	Price
Best A-1	Best Gas Traction Co., C. L., Davis St., San Leandro, Cal.	Crawler	Own	4-6½x8½	67.6	Gasoline Kerosene Distillate	$5750
Best S-2	Best Gas Traction Co., C. L. Davis Street, San Leandro, Cal.	Crawler	Own	4-5½x6½	48.4	Gasoline Kerosene Distillate	3250
	Blewett Tractor Co., See Webfoot.						
Blumberg Steady Pull 12-24	Blumberg Motor Mfg Co., Burnett & Mesquite St., San Antonio, Texas	Wheel	Own	4-4 x5	25.6	Gasoline	1485
Boring	Boring Tractor Corp., Rockford, Ill.	Wheel	Waukesha	4-4⅜x5¾	30.6	Gasoline Kerosene	....
Boss 12-24	Russell & Co., Massillon, Ohio.	Wheel	Waukesha	4-4½x5¾	32.4	Gasoline	....
Boss 15-30	Russell & Co., Massillon, Ohio.	Wheel	Climax	4-4½x5¾	32.4	Gasoline	....
Boss 20-40	Russell & Co., Massillon, Ohio.	Wheel	Climax	4-5½x7	48.0	Gasoline	....
Boss-Giant 40-80	Russell & Co., Massillon, Ohio	Wheel	Own	4-8 x10	....	Gasoline Kerosene	....
	Buckeye Mfg. Co.—See Trundaar.						
Bull	Bull-Tractor Madison Motors Corp., Second & Sycamore Sts., Anderson, Ind.	Wheel	Toro	2-5½x7	24.2	Gasoline Kerosene	1250
Burn-Oil	Burn-Oil Tractor Co., Warren, Ind.	Wheel	Own	2-6¾x7	35.6	Kerosene	1650
C. O. D.	C. O D. Tractor Co., Minneapolis, Minn.	Wheel	Own	2-6½x7	43.8	Kerosene	1395
	Case Plow Works Co., J. I.—See Wallis.						
Capital 12-24	Dissinger & Bro. Co., C.H.A., Fourth & Cherry Sts., Wrightsville, Pa.	Wheel	Own	4-5 x6	40.0	Kerosene	1250
Capital	Dissinger & Bro. Co., C.H.A., Fourth & Cherry Sts., Wrightsville, Pa.	Wheel	Own	4-5½x6½	48.4	Kerosene	1450
Case 10-18	Case T. M. Co., J. I., State & Douglas Sts., Racine, Wis.	Wheel	Own	4-3⅞x5	24.0	Gasoline Kerosene Distillate	1300
Case 22-40	Case T. M. Co., J. I., State & Douglas Sts., Racine, Wis.	Wheel	Own	4-5½x6¾	48.4	Gasoline Kerosene Distillate	3350
Case 15-27	Case T. M. Co., J. I., State & Douglas Sts., Racine, Wis.	Wheel	Own	4-4½x6	32.4	Gasoline Kerosene Distillate	1865
Caterpillar 75	Holt Manufacturing Co., Stockton, Cal.	Crawler	Own	4-7½x8	90.0	Distillate	....
Caterpillar 45	Holt Manufacturing Co., Stockton, Cal.	Crawler	Own	4-6 x7	57.6	Distillate	1200
Chase See page 57	Chase Tractors Corp., Syracuse, N. Y.	Wheel	Buda	4-4¼x5½	28.9	Gasoline Kerosene	1750
Chicago 40	Shaw Ass'n, Boyne City, Mich.	Wheel	Own	4-4½x6	32.4	Gasoline Kerosene	2500
Cletrac W 12-20	Cleveland Tractor Co., Lamb & Euclid Aves., Cleveland, Ohio.	Crawler	Own	4-4 x5½	25.6	Gasoline Kerosene	1495
	Cleveland Tractor Co.—See Cletrac.						
Coleman	Coleman Tractor Corp., 12th St. & Van Brunt Blvd., Kansas City, Mo.	Wheel	Climax	4-5 x6½	40.0	Gasoline Kerosene	1850
Comet 6	Comet Automobile Co., 825-69 Garfield Ave., Decatur, Ill.	Wheel	Erd	4-4 x6	25.6	Gasoline Kerosene	1875
Common Sense	Farm Power & Sales Co., 622 Ninth St., S. E., Minneapolis, Minn.	Wheel	Erd	4-5 x6	40.0	Gasoline	2200
Craig	Craig Tractor Co., Guardian Bldg., Cleveland, Ohio	Wheel	Beaver	4-4¾x6	36.1	Kerosene	....
	Crown Iron Works—See Nilson.						
Culto	Detroit Culto Tractor Corp., Book Building, Detroit, Mich	Wheel	.....	4-4 x6	25.6	Gasoline	775
Dakota	Pope Mfg. Co., Watertown, S. Dakota.	Wheel	Doman	4-4¾x6	36.1	Gasoline	1750
Dart Blue J.	Dart Truck & Tractor Corp., Waterloo, Iowa.	Wheel	.....	4-4½x6	32.4	Gasoline	2100
	Dauch Mfg. Co.—See Sandusky.						

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Tractors—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Type of Traction	Make of Engine	No. of Cylinders Bore and Stroke of Engine	N.A.C.C. H.P.	Fuel	Price
	Dayton-Dowd Co.—See Leader.						
Depue A	Depue Brothers Mfg. Co., Second Ave. & Arnold St., Clinton, Iowa	Wheel	Buda	4-4½x6	32.4	Gasoline	$2500
	Dessinger & Bro. Co., C. H. A.—See Capital.						
	Detroit Culto Tractor Corp.—See Culto.						
Dill	Dill Tractor Mfg. Co., Little Rock, Ark	Wheel	Continental	4-4½x5½	32.4	Gasoline	2480
	Electric Wheel Co.—See Allwork.						
Dual ..... See page 57	Dual Truck & Tractor Co. Decatur Ill.						
E. B. 12-20	Emerson-Brantingham Implement Co., 2723 University Ave., S. E., Minneapolis, Minn	Wheel	Own	4-4¾x5	36.1	Kerosene	....
Eagle F12-22	Eagle Mfg. Co., 624 Winnebago Street, Appleton, Wis	Wheel	Own	2-7 x8	39.6	Kerosene	1390
Eagle F16-30	Eagle Mfg. Co., 624 Winnebago Street, Appleton, Wis	Wheel	Own	2-8 x8	51.5	Kerosene	1850
Elgin	Elgin Tractor Corp., Piqua, Ohio	Wheel	Erd.	4-4 x6	25.6	Gasoline Kerosene	1385
	Evans Mfg. Co.—See Hudson.						
Fageol 19-12	Fageol Motors Co., 107th Ave. & Hollywood Blvd., Oakland, Cal	Wheel	Lycoming	4-3½x5	19.6	Gasoline Distillate	1525
Farm Horse B	Farm Horse Traction Works, Guttenburg, Iowa	Wheel	Climax	4-5 x6½	40.0	Gasoline Kerosene	1885
	Farm Power & Sales Co.—See Common Sense.						
Farquhar 15-25	Farquhar Co., A. B., York, Pa	Wheel	Buda	4-4½x6	32.4	Gasoline Kerosene	....
Farquhar 4-30	Farquhar Co., A. B., York, Pa	Whee	Own	4-6 x8	57.6	Gasoline Kerosene	....
Farquhar 4-40	Farquhar Co., A. B., York, Pa	Wheel	Own	4-7 x8	78.4	Gasoline Kerosene	....
Fitch 4	Four Drive Tractor Co., 949 E. Maple St., Big Rapids, Mich	Wheel	Climax	4-5 x6½	40.0	Gasoline Kerosene	3300
Flour City 20-35	Kinnard & Sons Mfg. Co., Bryant & 44th Ave., N., Minneapolis, Minn	Wheel	Own	4-5¼x6	44.1	Kerosene	....
Flour City 30-50	Kinnard & Sons Mfg. Co., Bryant & 44th Ave., N., Minneapolis, Minn	Wheel	Own	4-6¼x7	62.5	Kerosene	....
Flour City 40-70	Kinnard & Sons Mfg. Co., Bryant & 44th Ave., N., Minneapolis, Minn	Wheel	Own	4-7½x9	90.0	Kerosene	....
Flour City, Jr. 14-24	Kinnard & Sons Mfg. Co., Bryant & 44th Ave., N., Minneapolis, Minn	Wheel	Own	4-5 x5	40.0	Kerosene	...
	Ford & Son, Henry.—See Fordson.						
Fordson	Ford Motor Co. of Delaware, Elm St. (Tractor Division), Dearborn, Mich	Wheel	Own	4-4 x5	25.6	Kerosene	790
	Four Drive Tractor Co.—See Fitch.						
Franklin-Bullock C18-30	Franklin Tractor Co., Greenville, Ohio	Crawler	Climax	4-5 x6½	40.0	Gasoline Kerosene Distillate	....
Frick A	Frick Co., Waynesboro, Pa	Wheel	Erd.	4-4 x6	25.6	Kerosene	1450
Frick C	Frick Co., Waynesboro, Pa	Wheel	Beaver	4-4¾x6	32.1	Gasoline Kerosene	1800
Fulton	Fulton Tractor Mfg. Co., Anderson, Ind	Wheel	Waukesha	4-3¾x5½	22.5	Gasoline	1275
G. O. G.	General Ordnance Co., 2 W. 43rd St., New York, N. Y. (Plants at Derby, Conn. and Cedar Rapids, Iowa.)	Wheel	Waukesha	4-4½x5¾	32.4	Gasoline Kerosene	1485
	General Ordnance Co.—See G. O.						

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Tractors—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Type of Traction	Make of Engine	No. of Cylinders Bore and Stroke of Engine	N.A.C.C. H.P.	Fuel	Price
Grain Belt G	Grain Belt Mfg. Co., 119 Fifth St. N., Fargo, N. D.	Wheel	Waukesha	4-4¾x6¾	36.1	Gasoline	$2500
Gray 18-36	Gray Tractor Co., 30th Ave., S. E., & N. P. R. R., Minneapolis, Minn.	Wheel	Waukesha	4-4¾x6¾	36.1	Gasoline	2385
Great Western	Great Western Tractor Co., First Ave. & 31st St., Council Bluffs, Iowa	Wheel	Beaver	4-4¾x6	36.1	Kerosene	....
Hart-Parr 30	Hart-Parr Co., Lawler St., Charles City, Iowa	Wheel	Own	2-6½x7	33.8	Kerosene	1595
Hart-Parr 20	Hart-Parr Co., Lawler St., Charles City, Iowa	Wheel	Own	2-5¼x6½	22.0	Kerosene	1195
Holder C 12-20	Rock Island Plow Co., 600 Second Ave., Rock Island, Ill.	Wheel	Waukesha	4-4½x6¾	32.4	Gasoline Kerosene	....
Holder D 9-16	Rock Island Plow Co., 600 Second Ave., Rock Island, Ill.	Wheel	Waukesha	4-4¼x5¾	28.9	Gasoline Kerosene	....
	Holt Mfg. Co.—See Caterpillar.						
Huber Light Four 12-25	Huber Mfg. Co., Marion Ohio	Wheel	Waukesha	4-4½x5¾	32.4	Gasoline Kerosene	....
Hudson L	Evans Mfg. Co., Hudson, Ohio	Wheel	Buda	4-4½x6	32.4	Gasoline	....
Illinois	Illinois Tractor Co., Lincoln St., Bloomington, Ill.	Wheel	Climax	4-5 x6½	40.0	Kerosene	2375
Imperial 40	Imperial Machine Co., 1611 Central Ave., Minneapolis, Minn.	Wheel	Own	4-7½x9	90.0	Gasoline Kerosene	5000
Indiana	Indiana Silo & Tractor Co., Anderson, Ind.	Wheel	Le Roi	4-3½x4½	15.6	Gasoline	....
International 15-30	International Harvester Co. Harvester Bldg., Chicago, Ill.	Wheel	Own	4-5¼x8	44.1	Gasoline Kerosene Distillate	....
International 8-16	International Harvester Co. Harvester Bldg., Chicago, Ill. See also Titan.	Wheel	Own	4-4¼x5	28.9	Gasoline Kerosene Distillate	....
J T—N	J.T. Tractor Co., 1515 Fairfield Ave., Cleveland, Ohio	Crawler	Chief	4-4¾x6	36.1	Gasoline Kerosene	3300
	Kansas City Hay Press Co.—See Prairie Dog.						
Kardell 1921	Kardell Tractor & Truck Co., 6900 S. Broadway, St. Louis, Mo.	Wheel	Midwest	4-4½x5¼	27.2	Gasoline	1650
Keck-Gonnerman	Keck-Gonnerman Co., 601 W. Fourth St., Mt. Vernon, Ind.	Wheel	Own	2-7¼x8	42.1	Gasoline Kerosene	1650
	Kinnard & Sons Mfg. Co.—See Flour City.						
Kohl	Kohl Tractor Co., 7507 Linwood Ave., Cleveland, Ohio	Wheel	Beaver	4-4¾x6	36.1	Kerosene	2250
La Crosse M	LaCrosse Tractor Co., Front & King Sts., LaCrosse, Wis.	Wheel	Own	2-4 x6	....	Kerosene	750
La Crosse G	LaCrosse Tractor Co., Front & King Sts., LaCrosse, Wis.	Wheel	Own	2-6 x7	29.0	Kerosene	945
Lang	Lang Tractor Co., Palace Bldg., Minneapolis, Minn.	Wheel	Climax	4-5½x6	48.4	Gasoline Kerosene	1650
Lauson 15-30	Lauson Mfg. Co., John, W. Monroe St., New Holstein, Wis.	Wheel	Own	4-4¾x6	36.1	Gasoline Kerosene	2285
Leader C 12-36	Dayton-Dowd Co., Second & York Sts., Quincy, Ill.	Crawler	Climax	4-5½x7	48.4	Kerosene	2650
Leader N 16-32	Dayton-Dowd Co., Second & York Sts., Quincy, Ill.	Wheel	Climax	4-5 x6½	40.0	Kerosene	2150
Little Giant A	Little Giant Co., 199 Rock St., Mankato, Minn.	Wheel	Own	4-5½x6	44.1	Kerosene	3300
Little Giant B	Little Giant Co., 199 Rock St., Mankato, Minn.	Wheel	Own	4-4½x5	28.9	Kerosene	2200
Magnet B 14-28	Magnet Tractor Co., Globe Bldg., Minneapolis, Minn.	Wheel	Waukesha	4-4½x6¼	32.4	Gasoline Kerosene	1875
Mark 6	Scientific Farming Machinery Co., Basting Block, Minneapolis, Minn.	Wheel	Buda	4-4½x6	32.4	Gasoline Kerosene	1800

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Tractors (Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Type of Traction	Make of Engine	No. of Cylinders Bore and Stroke of Engine	N.A.C.C. H.P.	Fuel	Price
Master Jr.	Master Tractor Co., Lumber Exchange Bldg., Minneapolis, Minn	Wheel	Le Roi	4-2⅜x4	9.0	Gasoline	$600
Mid-West A	Agrimotor Mfg. Co., 421 N. Water St., Wichita Kans	Wheel	Gile	2-5 x6½	20.0	Gasoline	1085
Minneapolis 12-25	Minneapolis Threshing Machine Co., Hopkins, Minn.	Wheel	Own	4-4½x7	32.4	Gasoline Kerosene	1325
Minneapolis 22-44	Minneapolis Threshing Machine Co., Hopkins, Minn.	Wheel	Own	4-6 x7	57.6	Gasoline Kerosene	3600
Minneapolis 35-70	Minneapolis Threshing Machine Co., Hopkins, Minn.	Wheel	Own	4-7¼x9	84.1	Gasoline Kerosene	4900
Minneapolis 17-30	Minneapolis Threshing Machine Co., Hopkins, Minn.	Wheel	Own	4-4¾x7	36.1	Gasoline Kerosene	1800
Monarch 30-18	Monarch Tractor Co., Watertown, Wis	Crawler	Beaver	4-4¾x6	36.1	Gasoline Kerosene	2500
Moline Universal D	Moline Plow Co., Moline, Ill	Wheel	Own	4-3½x5	19.6	Gasoline	1325
Motox	Wabash Tractor Co., Wabash, Ind	Wheel	Buda	4-4½x6	32 4	Gasoline	2250
N. B. 1	New Britain Machine Co., Chestnut St., New Britain, Conn	Wheel	Own	2-2¾x4	6.05	Gasoline	400
N. B. 2	New Britain Machine Co., Chestnut St., New Britain, Conn	Wheel	Own	2-2¾x4	6.05	Gasoline	500
New Age D-4	Sutherland Mfg. Co., 125-29 Fifth Ave., S., Minneapolis, Minn	Wheel	Beaver	4-4½x6	32.4	Kerosene	....
Nilson Junior	Crown Iron Works, 1229 Tyler St. N. E., Minneapolis, Minn	Wheel	Waukesha	4-4¼x5¾	28.9	Gasoline Kerosene	1775
Nilson Senior	Crown Iron Works, 1229 Tyler St. N. E., Minneapolis, Minn	Wheel	Waukesha	4-5 x6¼	40.0	Gasoline Kerosene	2675
Ohio B	Ohio General Tractor Co., Citizens Bldg., Cleveland, Ohio	Crawler	Buda	4-4¼x5½	28.9	Gasoline Kerosene	1800
Peoria	Peoria Tractor Corp., of Iowa, Peoria, Ill	Wheel	Climax	4-5 x6½	40.0	Kerosene	....
Pioneer 18-36	Pioneer Tractor Mfg. Co., Carimona St., Winona, Minn	Wheel	Own	4-5½x6	48.4	Gasoline Kerosene	....
Pioneer 30	Pioneer Tractor Mfg. Co., Carimona St., Winona, Minn	Wheel	Own	4-7x8	78.4	Gasoline	....
Plowman 15-30	Plowman Tractor Co., E. Fourth St. & Limits, Waterloo, Iowa	Wheel	Buda	4-4½x6	32.4	Kerosene	1995
	Pope Mfg. Co.—See Dakota.						
Post D	Post Tractor Co., 9502 Richmond Ave., Cleveland, Ohio	Wheel	Waukesha	4-4¼x5¾	28.9	Gasoline Kerosene	.....
Port Huron A	Port Huron Engine & Thresher Co., 3401-3559 24th St., Port Huron, Mich	Wheel	Chief	4-4¾x6	36.1	Gasoline Kerosene	1700
Prairie Dog L	Kansas City Hay Press & Tractor Co., Fourth St. Viaduct, Kansas City, Mo	Wheel	Waukesha	4-3¾x5¼	22.5	Gasoline	.....
Prairie Dog D	Kansas City Hay Press & Tractor Co., Fourth St. Viaduct, Kansas City, Mo	Wheel	Waukesha	4-4½x6	32.4	Gasoline Kerosene	.....
Reed A	Reed Foundry & Machine Co., Kalamazoo, Mich	Wheel	Doman	4-4¾x6	36.1	Kerosene	2250
Reed B	Reed Foundry & Machine Co., Kalamazoo, Mich.	Wheel	Doman	4-5 x6	40.0	Kerosene	2400
Reliable	Reliable Tractor & Engine Co., Portsmouth, Ohio	Wheel	Own	2-6x7	28.2	Kerosene	985
	Rock Island Plow Co.—See Heider.						
Royer D	American Tractor, Foundry & Mfg Co, 315 W. Waterman St., Wichita, Kans	Wheel	Stearns	4-4x6	25.6	Gasoline Kerosene	1200
Royer 20	American Tractor, Foundry & Mfg. Co., 315 W. Waterman St., Wichita, Kans	Wheel	Erd	4-4¾x6	36.1	Gasoline Kerosene	....

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Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Type of Traction	Make of Engine	No. of Cylinders Bore and Stroke of Engine	N.A.C.C. H.P.	Fuel	Price
	Russell & Co.—See Boss, also Boss Giant.						
Samson Sieve-Grip	Samson Sieve-Grip Tractor Co., 1104 S. Aurora St. Stockton, Cal.	Wheel	Own	4-4¼x6¾	28.9	Gasoline Distillate	$1500
Sandusky J 10-20	Dauch Mfg. Co., 1531 First St., Sandusky, Ohio	Wheel	Own	4-4¼x5¼	28.9	Gasoline Kerosene Distillate	1250
Sandusky E 15-35	Dauch Mfg. Co., 1531 First St., Sandusky, Ohio	Wheel	Own	4-5 x6½	40.0	Gasoline Kerosene Distillate	1750
	Scientific Farming Machinery Co.—See Mark 6						
	Shaw Ass'n.—See Chicago						
Shelby C	Shelby Tractor & Truck Co., Shelby, Ohio	Wheel	Erd	4-3¾x5	22.5	Gasoline Kerosene	.....
Shelby D	Shelby Tractor & Truck Co., Shelby, Ohio	Wheel	Beaver Erd	4-4¾x6	36.1	Gasoline Kerosene	.....
Short Turn W	Short Turn Tractor Co., Globe Bldg. Minneapolis, Minn.	Wheel	Beaver	4-4¾x6	36.1	Kerosene	1500
Simplicity 14-25	Turner Mfg. Co., 230 Lake St., Port Washington, Wis.	Wheel	Buda	4-4¼x5½	28.9	Gasoline Kerosene	1695
Square Turn A	Square Turn Tractor Co., Norfolk, Neb	Wheel	Climax	4-5 x6½	40.0	Gasoline Kerosene	2075
Stewart A	Stewart Tractor Co. of Wisconsin, Waupaca, Wis.	Wheel	Waukesha	4-4¼x6½	28.9	Gasoline Kerosene	4500
Stinson 4-E	Stinson Tractor Co., 1702 16th St., Superior, Wis.	Wheel	Beaver	4-4¾x6	36.1	Gasoline Kerosene	2250
Stinson Super E	Stinson Tractor Co., 1702 16th St., Superior, Wis.	Wheel	Stearns	4-5 x6½	40.0	Gasoline Kerosene	....
Stone	Stone Tractor Mfg. Co., 11th and Whitaker Sts., Texarkana, Texas	Wheel	Beaver	4-4½x6	32.4	Gasoline Kerosene	2250
Strite	Strite Tractor Co., 307 Third St., S., Minneapolis, Minn.	Wheel	Climax	4-5 x6½	40.0	Gasoline Kerosene	....
	Sutherland Mfg. Co.—See New Age; also, World						
Titan 10-20	International Harvester Co. Harvester Bldg., Chicago, Ill.	Wheel	Own	2-6½x8	35.4	Gasoline Kerosene Distillate	....
Topp-Stewart B	Topp-Stewart Tractor Co., Clintonville, Wis.	Wheel	Waukesha	4-4¾x6¾	36.1	Gasoline	4000
Townsend 15-30	Townsend Mfg. Co., S. Franklin St. & Western Ave., Janesville, Wis.	Wheel	Own	2-7x8	39.2	Kerosene	1800
Townsend 25-30	Townsend Mfg. Co., S. Franklin St. & Western Ave., Janesville, Wis.	Wheel	Own	2-8½x10	57.4	Kerosene	3200
Triumph	Triumph Tractor & Truck Co., 110-16 Southwest Blvd., Kansas City, Mo.	Whee	Erd	4-4¾x6	36.1	Gasoline Kerosene	2400
Trundaar 10	Buckeye Mfg. Co., 1801-09 Columbus Ave., Anderson, Ind.	Crawler	Waukesha	4-5x6¼	40.0	Gasoline Kerosene	....
	Turner Mfg. Co.—See Simplicity.						
Twin City	Minneapolis Steel & Machinery Co., 29th St. & Minnehaha Ave., Minneapolis, Minn.	Wheel	Own	4-4¼x6	28.9	Kerosene	....
Twin City 16-30	Minneapolis Steel & Machinery Co., 29th St. & Minnehaha Ave., Minneapolis, Minn.	Wheel	Own	4-5 x7½	40.0	Kerosene	....
Twin City 25-45	Minneapolis Steel & Machinery Co., 29th St. & Minnehaha Ave., Minneapolis, Minn.	Wheel	Own	4-6¼x8	63.5	Kerosene	....
Twin City 40-60	Minneapolis Steel & Machinery Co., 29th St. & Minnehaha Ave., Minneapolis, Minn.	Wheel	Own	4-7¼x9	84.1	Kerosene	....
Twin City 60-90	Minneapolis Steel & Machinery Co., 29th St. & Minnehaha Ave., Minneapolis, Minn.	Wheel	Own	6-7¼x9	126.1	Kerosene	....
Two-Way A	Two-Way Plow Tractor Co., Dayton, Ohio	Wheel	Buda	4-4½x6	32.4	Gasoline Kerosene	1500
Uncle Sam 20-30	U. S. Tractor & Machinery Co., 100 Tayco St., Menasha, Wis.	Wheel	Beaver	4-4¾x6	36.1	Gasoline Kerosene	....
Velie 12-24 See page 23	Velie Motors Corp., 109 Velie Place, Moline, Ill.	Wheel	Own	4-4⅛x5½	27.2	Kerosene	1785

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Tractors—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Type of Traction	Make of Engine	No. of Cylinders Bore and Stroke of Engine	N.A.C.C. H.P.	Fuel	Price
Victory	Victory Tractor Co., Greensburg, Ind.	Wheel	Grey	4-3½x5	19.6	Gasoline	$12[illegible]
Wallis K	Case Plow Works Co., J. I., Racine, Wis.	Wheel	Own	4-4¼x5¾	28.9	Gasoline Kerosene	...
Waterloo Boy N	Waterloo Gasoline Engine Co., Miles St., Waterloo, Iowa	Wheel	Own	2-6½x7	33.8	Kerosene	...
Webfoot 53	Blewett Tractor Co., 21st & A Sts., Tacoma, Wash.	Crawler	Wisconsin	4-5¾x7	53.9	Gasoline Distillate	53[illegible]
Wetmore 12-25	Wetmore, H. A., W. Second & Main Sts., Sioux City, Iowa	Wheel	Waukesha	4-4 x5¾	25 6	Gasoline Kerosene	16
Whitney 9-18	Whitney Tractor Co., W. Johnson St., Upper Sandusky, Ohio	Wheel	Own	2-5½x6½	24.2	Gasoline	11
Wisconsin E.	Wisconsin Farm Tractor Co., Sauk City, Wis.	Wheel	Climax	4-5 x6½	40.0	Kerosene	2[illegible]
Werld	Sutherland Mfg. Co., 125-29 Fifth Ave., S., Minneapolis, Minn.	Wheel	Beaver	4-4¾x6	36.1	Kerosene	...
Yuba 20-35	Yuba Mfg. Co., Marysville, Cal.	Crawler	Wisconsin	4-5¾x7	53.9	Distillate	4[illegible]
Yuba 12-20	Yuba Mfg. Co., Marysville, Cal.	Crawler	Waukesha	4-4½x6¾	33.4	Distillate	2[illegible]
Zelle 12-25	Zelle Tractor Co., Merchants-Laclede Bldg., St. Louis, Mo.	Wheel	.....	4-4¼x5½	28.9	Kerosene	.

Motorcycles

Brief Specifications, Prices and Names and Addresses of Manufacture

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	Transmission	Pr
Cleveland 20	Cleveland Motorcycle Mfg. Co., 7209 Platt Ave., Cleveland, Ohio	1-2¾x2¾	Own	Worm	
	Cyclemotor Corp.—See Evans.				
Eagle	Eagle Motorcycle Co., 715 Centre Street, Brockton, Mass.	2-3½x3⅝	Spacke	Three-Speed Chain	
Emblem	Emblem Mfg. Co., Angola, N. Y.	2-2⅝x3	Own	Three-Speed Chain	
Excelsior 1921	Excelsior Motor Mfg.& Supply Co.,3701 Cortland St., Chicago, Ill.	2-3 11/16x3½	Own	Three-Speed Chain	
	See also Henderson.				
Evans G	Cyclemotor Corp., 149 Cady St., Rochester, N. Y.	1-1¾x2	Own	Direct Belt	
Harley-Davidson 20J	Harley-Davidson Motor Co., 3732 Chestnut St., Milwaukee, Wis	2-3 5/16x3½	Own	Three-Speed Chain	
20WJ		2-2¾x3	Own	Three-Speed Chain	
	Hendee Mfg. Co.—See Indian.				
Henderson K	Excelsior Motor Mfg.&Supply Co.,3701 Cortland St., Chicago, Ill.	4-2 11/16x3½	Own	Three-Speed Chain	
Indian Powerplus NE 21	Hendee Mfg. Co. 837 State St., Springfield, Mass.	2-3½x3 11/16	Own	Three-Speed Chain	
Indian Powerplus N 21		2-3½x3 11/16	Own	Three-Speed Chain	
Indian G 21		2-2¾x3 1/16	Own	Three-Speed Chain	
Indian G.E. 21		2-2¾x3 1/16	Own	Three-Speed Chain	
Iver-Johnson 16-4B	Johnson's Arms & Cycle Works, Iver, 109 River St., Fitchburg, Mass.	1-3¼x3¾	Own	Direct Belt	
Iver-Johnson 16-4C		1-3¼x3¾	Own	Direct Chain	
Iver-Johnson 16-4C.T.S.		1-3¼x3¾	Own	Two-Speed Chain	
Iver-Johnson 16-7		2-3¼x3¾	Own	Direct Chain	
Iver-Johnson 16-7 T.S.		2-3¼x3¾	Own	Two-Speed Chain	
R. S. 21T	Reading Standard Co., Water St., Reading, Pa.	2-3⅝x4	Own	Three-Speed Chain	
R. S. 21T.E.		2-3⅝x4	Own	Three-Speed Chain	
Schickel T	Schickel Motor Co., 55 Garden St., Stamford, Conn.	1-3 x2½	Own	Two-Speed Chain	

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Motor Boats

Brief Specifications, Prices and Names and Addresses of Manufacturers

Manufacturer's Name and Address	Type of Boat	Length	H. P.	No. of Cylinders	Price
Albany Boat Corp., Broadway & Seventh St., Watervliet, N.Y.	Runabout	26	40	4	$ 3700
	Cruiser	36	90	4	9200
Belle Isle Boat & Engine Co., 2662 E. Jefferson Ave., Detroit, Mich.	Runabout	26	125	4	7500
Cape Cod Ship Building Corp., 367 Main St., Wareham, Mass.	Dory	20	4	1	.....
Consolidated Shipbuilding Corp., Morris Heights, New York N. Y.	Runabout	25	22	4	3600
	Runabout	32	28	6	.....
	Runabout	35	150		.....
	Cruiser	52	75	4	.....
Dachel-Carter Ship & Boat Building Co., Benton Harbor, Mich	Runabout	24	30	4	2000
	Cruiser	40	100	6	10000
	Cruiser	50	200	8	18000
	Cruiser	60	400	16	25000
Elco Works, Ave. A & North St., Bayonne, N. J.	Elco Express	30	65	4	5500
	Elco Express	36	100	6	7000
	Cruisette	32	36	4	4000
	Cruiser	50	80	4	16500
Everett-Hunter Boat Co., McHenry, Ill.	Runabout	22	12	4	600
	Runabout	25	20	4	1000
Fay & Bowen Engine Co., Lake St., Geneva, N. Y.	Runabout	24	22	4	.....
	Runabout	30	50	6	.....
	Runabout	27	40	4	.....
Great Lakes Boat Building Corp., 333 Becher St., Milwaukee, Wis.	Cruiser	54	300	12	32800
Hacker Boat Co., 323 Crane Ave., Detroit, Mich.	Runabout	18	10	4	1300
	Runabout	26	40	4	2750
Hafer Boat Works, Spirit Lake, Iowa	Runabout	32	20	4	2000
International Shipbuilding & Marine Engineering Corp., Nyack, N. Y.	V. Bottom	27	60	4	3000
	Cruiser [Raised Deck]	32	20	4	3950
	Cruiser [Bridge Deck]	32	20	4	4300
Luder Marine Construction Co., Stamford, Conn.	Cruiser	60	100	2	34000
Mullins Body Corp., 182 Franklin Ave., Salem, Ohio	Auto Boat	26	20	4	.....
	Auto Boat	26	35	4	.....
	Auto Boat	20	12	4	.....
	Auto Boat	20	8	2	.....
	Auto Boat	22	20	4	.....
	Auto Boat	22	20	4	.....
	Auto Boat	17	12	4	.....
	Auto Boat	21	12	4	.....
	Auto Boat	21	9	4	.....
	Auto Boat	25	20	4	.....
	Auto Boat	25	35	4	.....
	Steel Launch	18	8	2	.....
	Steel Launch	18	12	4	.....
	Steel Launch	16	3	1	.....
	Steel Launch	16	8	2	.....
	Steel Launch	18	8	2	.....
	Steel Launch	18	12	4	.....
	Wood Launch	17	3	1	.....
	Wood Launch	17	12	4	.....
Racine Boat Co., 1814 Clark St., Racine, Wis.	Wisco Runabout	19	12	4	1000
	Raco Runabout	25	20-30	4	1650
	Runabout	30	35	4	2250
	Runabout	35	40	4	2500
	Speed Boat	19	6	2	750
	Speed Boat	19	10	4	1000
	Launch	25	11	2	750
	Launch	30	15	2	950
	Launch	30	27-36	4	1500
Reliance Motor Boat Co., 207th St. & Harlem River, W., New York, N. Y.	Runabout	26	100	4	5000
	Runabout	30	150	6	8000
Richardson Boat Co., 370 Sweeney St., North Tonawanda, N.Y.	Runabout	25	40	4	2700
Sea Bright Dory Works, 491 Atlantic Ave., Long Branch, N. J.	Dory	20	11	1	795
	Dory Cruiser	25	16	4	4000

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Motor Boats—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Manufacturer's Name and Address	Type of Boat	Length	H. P.	No. of Cylinders	Price
Toppan Boat Mfg. Co., 125 Riverside Ave., Medford, Mass.	Dory	18	3	1	$275
	Dory	20	6	2	475
	Dory	22	8	4	700
	Launch	22	12	4	1200
	Launch	26½	16	4	1800
Valley Boat Co., Saginaw, Mich	Shallow Draft Launch	17	9 12	4	900
	Runabout	19	9 12	4	950
	Family Runabout	26	20 30	4	.....
Ventnor Boat Works, Fifth & C Aves., Atlantic City, N. J.	Runabout	25	24	4	1850
		20	24	4	2000
White & Co., E. M., 156 Water St., Oldtown, Me.	Runabout	20	5	2	350

Aircraft

AIRPLANES, SEAPLANES and FLYING BOATS

Aeromarine Plane & Motor Co., Keyport, N. J.

Anglo-American Corp., 42 Broadway, New York, N. Y.

Boeing Airplane Co., (Georgetown), Seattle, Wash.

Cantilever Aero Co., 1269 Broadway, New York, N. Y.

Chicago Aero Works, 202 N. Wabash Ave., Chicago, Ill.

Curtiss Aeroplane & Motor Corp., Garden City, N. Y.

Dayton-Wright Airplane Co. (Moraine City), Dayton, Ohio.

Dewey Aeroplane Co., Dewey, Okla.

Eastern Aircraft Corp., 340 First St. (So. Boston), Boston, Mass.

Gallaudet Aircraft Corp., 25 W. 43rd St., New York, N. Y.

Harding, Zook & Bahl Airplane Corp., 107 N. Ninth St., Lincoln, Neb.

Hild & Marshonet, Yale St., Hempstead, N. Y.

L. W. F. Engineering Co., Third Ave. & Eighth St., College Point, N. Y.

Lawson Airplane Co., First National Bank Bldg., Milwaukee, Wis.

Lewis & Vought Corp., Webster & Seventh Aves., Long Island City, N. Y.

Loening Aeronautical Engineering Corp., 351 W. 52nd St., New York, N. Y.

Martin Co., G. L., 16300 St. Clair Ave., Cleveland, Ohio.

Nebraska Aircraft Corp, Richards Block, Lincoln, Neb.

Ordnance Engineering Corp., 120 Broadway, New York, N. Y.

Richardson Aeroplane Corp., New Orleans, La.

Sperry Aircraft Co., Lawrence, Farmingdale, N. Y.

Thomas-Morse Aircraft Corp., Ithaca, N. Y.

United Aircraft Engineering Corp., 52 Vanderbilt Ave., New York, N. Y.

Victor Aircraft Corp., Freeport, N. Y.

West Virginia Aircraft Co., Wheeling, W. Va.

Williams Bros. Aircraft Corp., San Francisco, Cal. **(See page 381.)**

Wittemann-Lewis Aircraft Co., Hasbrouck Heights, N. J.

DIRIGIBLES

Connecticut Aircraft Co., 117 Court St., New Haven, Conn.

French-American Balloon Co., 4460 Chouteau Ave., St. Louis, Mo.

Goodyear Tire & Rubber Co., Akron, O. **(See page 1015.)**

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SECTION 2

Accessories, parts, materials and supplies for automobiles, commercial vehicles, tractors, motorcycles, motor boats and aircraft. Specialties for Ford cars; also machinery, tools, shop equipment and supplies for factories, garages and repair shops.

EVERYTHING in this section is listed alphabetically under the NOUN.

For example: "Pressed Steel Frames" *are listed under* "Frames,"—"Roller Bearings" *under* "Bearings."

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PRECISION BALL BEARINGS

(PATENTED)

There is but one true measure of value, viz.: the capacity for service. It is a recognition of this fact by responsible manufacturers which has made "NORMA" Bearings the standard in the high-grade magnetos and lighting generators internationally identified with cars, trucks, tractors and power boats of the better class.

See That Your Electrical Apparatus is "NORMA" Equipped

THE NORMA COMPANY OF AMERICA

Anable Avenue
Long Island City
New York

Ball, Roller, Thrust and Combination Bearings

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SECTION II

Accessories, Parts, Machinery and Tools

Every product listed in this section is classified alphabetically under the NOUN or principal word.

ABRASIVE PAPERS—See Paper, Emery and Sand

ABRASIVE WHEEL TRUERS—See Dressers, Emery Wheel

ABRASIVE WHEELS—See Wheels, Grinding

ACCELERATOR PEDALS—See Pedals, Special Accelerator

ACCELERATOR PEDALS FOR FORDS—See Accelerators, Foot

ACCELERATORS, FOOT—See Pedals, Special Accelerator

ACCELERATORS, Foot, for Fords

(Foot pedals for controlling throttle)

Adamson Mfg. Co., East Palestine, O.

American Automatic Devices Co., 515 W. Monroe St., Chicago, Ill. (See page 643.)

Apco Mfg. Co., Providence, R. I.

Auto Metal Parts Co., 624 Michigan Ave., Chicago, Ill.

B. M. W.—See Geneseo Auto Supply Co.

Badger Mfg. Corp., Milwaukee, Wis. (See page 173.)

Bull Dog—See Fulton Co.

Comfort Motor Machine Co., 715 Galapago St., Denver, Colo. "Simplex."

Cooper Mfg. Co.—See Fulton Co.

Detroit Starter Co., 124 E. Larned St., Detroit, Mich. "Speederator."

Donlin Auto Co., C. A., Hopkins, Mo.

Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Sales Department for Webber Co., P. H., Hoopeston, Ill.) "W. & C." (See page opposite Title Page.)

Ellison Brass Mfg. Co., Jamestown, N. Y.

Ewald—See Zinke Co.

Excelsior Auto Parts & Supply Co., Botsford, Conn.

Ford Relief Spring & Frame Supporter Co., 7 E. 42d St., New York, N. Y.

Fulton Co., 75th & National Aves., Milwaukee, Wis. (Sole Distributors for W. H. Thomas, Spencer, Ia. "Bull Dog.") (See page 1033.)

Gasco—See General Auto Specialty Co.

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 174 and 175.)

General Auto Specialty Co., 151 Berkeley St., Boston, Mass. "Gasco."

Geneseo Auto Supply Co., Geneseo, Ill. "B. M. W."

Heaton & Ault, 6248 Greenwood Ave., Chicago, Ill. "Red-I-Fit."

Humboldt—See Republic Auto Parts Co.

J. C. M.—See Mewshaw, J. C.

Kees Mfg. Co., F. D., 24 High St., Beatrice, Neb.

Lanshield Mfg. Co., 510 First Ave., West Haven, Conn.

Mewshaw, J. C., Stock Exchange Bldg., Baltimore, Md. "J. C. M."

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)

New Era Spring & Specialty Co., 51-55 Cottage Grove St., S. W., Grand Rapids, Mich.

Nifty—See Sapp, Will A.

Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. (See page 317.)

Presto—See R. & R. Mfg. Co.

R. & R. Mfg. Co., 144 S. Delaware St., Indianapolis, Ind. "Presto."

Red-I-Fit—See Heaton & Ault.

Republic Auto Parts Co., 31-35 Tenth St., Long Island City, N. Y. "Humboldt."

Rice Co., C. H., 213 Smith Blk., Cherokee, Ia. "Sense."

Romort Mfg. Co.—See Zinke Co.

Sapp, Will A., Elgin, Neb. "Nifty."

Sense—See Rice Co.

Simplex—See Comfort Motor Machine Co.

Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 507.)

Thomas, W. H.—See Fulton Co.

Triumph—See Universal Products Co.

U. & J. Carburetor Co., 507 W. Jackson Blvd., Chicago, Ill.

Universal Products Co., 903 W. Chicago Ave., Chicago, Ill. "Triumph."

W. & C.—See Eckhouse & Co.

Walker Mfg. Co., Hamilton & Michigan Sts., Racine, Wis.

Webber & Co.—See Eckhouse & Co.

Williams Bros., Aircraft Corp., San Francisco, Cal. (See page 381.)

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Romort Mfg. Co., Oakfield, Wis. "Ewald.") (See pages 310 and 311.)

ACCESSORY CABINETS—See Cabinets, Accessory

ACCIDENT CASES—See Cases, Medical Emergency.

ACCOUNTANTS

(Covering only Accountants who advertise in this publication.)

Davies, J. O., 1834 Broadway, New York, N. Y. (See page 59.)

ACCOUNTING BOOKS—See Books, Accounting

ACCOUNTING SYSTEMS—See Books, Accounting

ACETYLENE BRAZING TORCHES—See Torches, Acetylene

ACETYLENE BURNER CLEANERS—See Cleaners, Acetylene

ACETYLENE BURNERS — See Burners, Acetylene Lamp

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ACETYLENE GAS PURIFIERS—See Purifiers, Acetylene Gas

ACETYLENE GENERATORS—See Generators, Acetylene

ACETYLENE HEADLIGHTS—See Lamps or Headlights, Acetylene

ACETYLENE HEADLIGHTS, TRACTOR—See Headlights, Tractor Acetylene

ACETYLENE LAMP BURNERS—See Burners, Acetylene Lamp

ACETYLENE LAMP CONNECTORS—See Connectors, Acetylene Lamp

ACETYLENE LAMP LIGHTERS—See Lighters, Acetylene Lamp

ACETYLENE LAMPS—See Lamps, or Headlights, Acetylene

ACETYLENE PRESSURE REGULATORS—See Regulators, Acetylene Pressure

ACETYLENE TANK KEYS—See Keys, Acetylene

ACETYLENE TANK TRUCKS—See Trucks, Acetylene and Oxygen Tank

ACETYLENE TANKS—See Tanks, Acetylene

ACETYLENE WELDING TORCHES—See Torches, Acetylene Welding

ACID, BATTERY—See Electrolyte, Battery

ACID, CLEANING—See Compounds, Rust Preventing

ACID, SOLDERING—See Flux, Soldering

ADAPTERS, CHASSIS—See Converters, Chassis

ADAPTERS, Electric Lamp

(For converting gas or oil lamps into electric lamps)

Adams & Westlake Co., Chicago, Ill. "Adlake." (See page 551.)

Adlake—See Adams & Westlake Co.

Aid Mfg. Co., 2625-31 Stewart Ave., Chicago, Ill. "Amco." (See page 547.)

Amco—See Aid Mfg. Co.

Chicago Electric Mfg. Co., 2817 S. Halsted St., Chicago, Ill. "Handy."

Gil-Bo—See Metal Specialties Mfg. Co.

Hammer Co., E. A., 1839 Euclid Ave., Cleveland, O.

Handy—See Chicago Electric Mfg. Co.

Manhattan Electrical Supply Co., 17 Park Place, New York, N. Y.

Metal Specialties Mfg. Co., 338-52 N. Kedzie Ave., Chicago, Ill. "Gil-Bo." (See page 547.)

Miller Mfg. Co., E. L., 22 W. Third St., Kansas City, Mo. "Tillery."

Morse, Frank W., 289 Congress St., Boston, Mass. (See page 549.)

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco."

S-H—See Stuart-Howland Co.

Smith Mfg. Co., F. A., Rochester, N. Y. (See page 293.)

Stuart-Howland Co., 131-41 Federal St., Boston, Mass. "S-H."

Tillery—See Miller Mfg. Co.

Williams Mfg. Co., Clarksburg, W. Va. "Wilson."

Wilson—See Williams Mfg. Co.

ADAPTERS, STORAGE BATTERY—See Connectors, Storage Battery

ADJUSTABLE VALVE LIFT RODS—See Rods, Adjustable Valve Lift

ADJUSTABLE WRENCHES—See Wrenches

ADJUSTERS, BELT, FOR FORDS—See Adjusters, Fan Belt

ADJUSTERS, BRAKE

Auto-Brake Adjuster Co., Schofield Bldg., Cleveland, O. "Dearborn."

Dearborn—See Auto-Brake Adjuster Co.

ADJUSTERS, CARBURETOR OR DASH CONTROL FOR FORDS—See Controls—Carburetor for Fords

ADJUSTERS, DASH CONTROLS FOR FORDS—See Controls, Dash Carburetor

ADJUSTERS, Fan Belt, for Fords

(Spring attachment for keeping a uniform and constant tension on belt so that when adjustment is once made it will be automatically maintained)

Champion—See Dexter Specialty Co.

Dexter Specialty Co., 112 N. Dexter St., Ionia, Mich. "Champion."

ADJUSTERS, RIM—See Tools, Demountable Rim

ADJUSTERS, TIRE—See Tools, Tire

ADJUSTERS, TIRE CHAIN—See Tighteners, Tire Chain

ADJUSTERS, VALVE—See Rods, Adjustable Valve Lift

ADJUSTERS, Valve Stem, for Fords

(For taking up wear and play between valve stem and push rod—See also Rods, Push)

Apco Mfg. Co., Providence, R. I.

Bowen Products Corp., Auburn, N. Y. "Empress." (See page 331.)

Chadbourn Sales Co., 300-12 Tenth Ave., S., Minneapolis, Minn. "Townsan."

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.

Empress—See Bowen Products Corp.

Efemco—See Foster, Merriam & Co.

Foster, Merriam & Co., Meriden, Conn. "Efemco." (See page 821.)

Home Light Co., 3353 Milwaukee Ave., Chicago, Ill.

Humboldt—See Republic Auto Parts Co.

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ARMAND

AUTOMOTIVE ACCESSORIES

SOLD THROUGH JOBBERS

EXTRA FLOATS

BATTERY HYDROMETER

SOCKET WRENCHES FOR FORD CARS

BATTERY FILLER

Rubber Bulb and Stem
8 Oz. Bulb

Connecting Rod Wrench No. 6280

Single-end Cylinder Head Wrench No. 6210

SCREW QUADRO DRIVER

FOUR-TO-A-SET

TOOL STEEL BLADES

Double-end Cylinder Head Wrench No. 6260

Triple-end Cylinder Head and Rear Axle Housing Wrench No. 6300

SIXSET ARMAND-CHICAGO

TRIO

THREE-TO-A-SET

Socket Wrench Handle No. 5200

SIXSET

BALL JOINTS FOR FORD CARS

Twelve Openings 7/32" to 9/16" 6 Wrenches

No. 8536-37 12/32" Cold Rolled Steel

TWO-TO-A-SET

Made of Cold Rolled Steel. Nickel-plated, Polished or Case Hardened. Mottled Finish.

AUXILIARY RADIUS RODS

For Ford Front Axle

8 Styles

FORD AXLE

AUXILIARY RADIUS ROD

UTILITY ROBE-RAIL

Solid steel bar. Length 29". 7/16" dia. Black enamel.

SPARK INTENSIFIERS

WILLSPARK

FOR ALL CARS

PISTON RING COMPRESSOR

For all cars

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ADJUSTERS, Valve Stem, for Fords (Continued)

Midway Mechanical Co., St. Paul, Minn. (See page 667.)

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)

P. & L.—See Parkhurst-Lavender Auto & Machine Co.

Parkhurst-Lavender Auto & Machine Co., Webster City, Ia. "P. & L."

Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Humboldt."

Townsan—See Chadbourn Sales Co.

Whitehouse Mfg. Co., 42 Elm St., Newark, N. J. (See page 637.)

AEROPLANES—See Section I

AGENCIES, Employment

Active Clearing Exchange, 8 S. Dearborn St., Chicago, Ill. (See page 83.)

Truebloud & Co., V. G., Association Bldg., Chicago, Ill. (See page 83.)

AGITATORS, MIXTURE—See Mixers, Fuel

AIR BAGS—See Bags, Steam Tire Curing

AIR BRAKES—See Brakes, Air

AIR CLEANERS—See Cleaners, Air

AIR COCKS—See Cocks, Spring Key; also Cocks, Pet

AIR COMPRESSORS — See Compressors, Garage Air

AIR GAGES—See Gages, Steam

AIR LINE TIRE CONNECTIONS—See Connections, Air System Tire

AIR MOISTENERS—See Moisteners, Air or Mixture

AIR NOZZLES—See Nozzles, Air Upholstery Cleaning

AIR PUMPS—See Pumps

AIR RELEASING TOOLS—See Tools, Tire Deflating

AIR STARTERS—See Starters, Compressed Air

AIR WASHERS—See Cleaners, Air

ALARMS, BOILER—See Columns, Water

ALARMS, Low Oil, for Fords

Handy Mfg. Co., 15 Library St., Grand Rapids, Mich.

Kay Co., Kay H., 967 Woodward Ave., Detroit, Mich. (See pages 83 and 869.)

ALARMS, Tire

(For sounding an alarm when tires are under or over inflated)

Ewing-Ely Mfg. Co., 3034 S. Main St., Los Angeles, Cal. (See page 923.)

Gem—See Safety Tire Signal Co.

Harris Accessory Co., Greenville, S. C. (See page 1197.)

Pardue, John L. (Wellston Sta.), St. Louis, Mo.

Safety Tire Signal Co., 655 12th St., Boulder, Colo. "Gem."

Terpening, E. A., Mokena, Ill.

ALCOHOL, Denatured

(For use in Radiators to prevent water freezing; for other Anti-Freezing Mixtures—See Compounds, Anti-Freezing)

Berg Industrial Alcohol Co., David, Ellicott Sq. Bldg., Buffalo, N. Y.

Jefferson Distilling & Denaturing Co. (Harvey), New Orleans, La. "Radico."

Kentucky Distillery & Warehouse Co., 56 Pine St., New York, N. Y. "Solox."

Phillips, C. F., Little Bldg., Lincoln, Neb.

Pyro—See United States Industrial Alcohol Co.

Radico—See Jefferson Distilling & Denaturing Co.

Solox—See Kentucky Distillery & Warehouse Co.

U. S. Industrial Alcohol Co., 27 William St., New York, N. Y. "Pyro."

Woolner Distilling Co., ft. Spillman St., Peoria, Ill.

ALIGNERS, RUNNING GEAR—See Gages, Wheel Aligning

ALIGNING GAGES—See Gages, Wheel Aligning

ALIGNING JIGS—See Jigs, Piston Aligning.

ALIGNING JIGS FOR FORDS—See Jigs, Connecting Rod Aligning

ALIGNING JIGS, CAMSHAFT—See Reamers and Jigs, Camshaft Aligning, for Fords

ALIGNING REAMERS, CAMSHAFT—See Reamers and Jigs, Camshaft Aligning, for Fords

ALLIGATOR WRENCHES—See Wrenches, Nut and Bolt

ALTERNATING CURRENT RECTIFIERS—See Rectifiers, Alternating Current

ALTIMETERS, Aircraft

(See also Barometers; also Barographs)

Schneider Bros. Instrument Co., 350-52 Palisade Ave., Jersey City, N. J.

Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) (See page 301.)

Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.

Van Sicklen Co., Elgin, Ill. (See page 1105.)

ALTITUDE INDICATING BAROMETERS—See Barometers, Altitude Indicating

ALUMINUM CASTINGS—See Castings, Aluminum

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ALUMINUM MATTING—See Matting, Aluminum

ALUMINUM PAINTS—See Paints, Aluminum

ALUMINUM, Sheet and Rod

(For Aluminum Castings—See Castings, Aluminum; for Aluminum Tubing—See Tubing, Aluminum)

Aluminum Co. of America, Oliver Bldg., Pittsburgh, Pa.

U. S. A.—See United Smelting & Aluminum Co.

United Smelting & Aluminum Co., 133-39 Commerce St., New Haven, Conn. "U. S. A."

ALUMINUM SOLDER—See Solder, Aluminum

ALUMINUM TUBING—See Tubing, Aluminum

AMBULANCES, WRECKING—See Trucks, Castors and Spare Wheels, Wrecking

AMMETERS and VOLTMETERS, Standard

(For switchboard and electric vehicle use; for Pocket, Cowl or Dash Board Meters—See Gages, Battery)

Burton-Rogers Co., 755 Boylston St., Boston, Mass. (Sales Department for Hoyt Electrical Instrument Co., Penacook, N. H.) (See page 467.)

General Electric Co., Schenectady, N. Y. (See page 793.)

Harvard Electric Co., 525 W. Van Buren St., Chicago, Ill.

Hickok Electrical Instrument Co., Cleveland, O.

Hoyt Electrical Instrument Co.—See Burton-Rogers Co.

Imp—See Roller-Smith Co.

Jewell Electrical Instrument Co., 1648 Walnut St., Chicago, Ill.

Keystone Electrical Instrument Co., Wayne & Windrim Aves., Philadelphia, Pa.

Norton Electrical Instrument Co., Manchester, Conn.

Pignolet, Louis M., 78 Cortlandt St., New York, N. Y.

Queen-Gray Co., 616-18 Chestnut St., Philadelphia, Pa.

Reliance Instrument Co., 1185 W. Van Buren St., Chicago, Ill.

Roller-Smith Co., 9 Barclay St., New York, N. Y. "Imp." (See page 83.)

Weston-Electrical Instrument Co., 16 Weston Ave., Newark, N. J. (See page 85.)

ANGLE BENDERS—See Benders, Angle

ANGLE STEEL—See Steel, Angle

ANGULAR BELTS—See Belts, V

ANNEALING—See Treating, Heat

ANNEALING FURNACES—See Furnaces, Annealing

ANNEALING AND HEAT TREATING—See Treating, Heat

ANNUNCIATORS, Automobile

(For signaling from passenger to driver; for Speaking Tubes—See Tubes, Speaking; for Limousine Telephones—See Telephones, Limousine)

Mil-Mac Mfg. Co., 16th St. & Glenwood Ave., Philadelphia, Pa. "Velvet-Grip."

Velvet-Grip—See Mil-Mac Mfg. Co.

ANTI-DRAFT SHIELD — See Visors and Rainshields, Top

ANTI-FREEZE, RADIATOR—See Alcohol, Denatured; also Compounds, Anti-Freezing

ANTI-FREEZING SOLUTION—See Alcohol, Denatured; also Compounds, Anti-Freezing

ANTI-FRICTION METAL — See Metals, Bearing

ANTI-RATTLERS, Brake Rod Clevis, for Fords

(See also Supports, Brake Rod)

Affa Specialty Co., 34 Southbridge St., Worcester, Mass.

American Auto Products Co., 1819 L St., N. W., Washington, D. C. "Little Giant."

Apco Mfg. Co., Providence, R. I.

Jessop & Thompson, 1421 S. Michigan Ave., Chicago, Ill. (Sole Distributors for U. S. Automatic Spring Co., Napoleon, O.) "Superior."

Little Giant—See American Auto Products Co.

Superior—See Jessop & Thompson.

U. S. Automatic Spring Co.—See Jessop & Thompson.

ANTI-RATTLERS, Door

(Rubber or Spring Bumpers to prevent the rattling of Car Doors)

Atwood Vacuum Machine Co., 130 N. Water St., Rockford, Ill.

Autoquip Mfg. Co., Rochester, N. Y. (See page 745.)

Bailey Co., W. J., Newark, N. J. "C. B."

C. B.—See Bailey Co.

Carey-McFall Co., 2156 E. Dauphin St., Philadelphia, Pa.

Cleveland National Machine Co., 1366 W. 70th St., Cleveland, O.

Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.

Fernald Mfg. Co., North East, Pa. "Little B-R-A-T-S."

Ferro Stamping & Mfg. Co., Detroit, Mich. (See page 583.)

Frantzen—See Williams, Franklin.

Little B-R-A-T-S—See Fernald Mfg. Co.

Mitchell Specialty Co., 3631 N. Smedley St., Philadelphia, Pa.

Ollard, James & Wm., 964 E. Third St., Williamsport, Pa. "S-O."

Parsons Mfg. Co., 5301-47 Bellevue Ave., Detroit, Mich.

Rostand Mfg. Co., Milford, Conn.

S-O—See Ollard, James & Wm.

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.

Stadco—See Stadeker Metal Specialty Co.

Stadeker Metal Specialty Co., 310 S. Canal St., Chicago, Ill. "Stadco."

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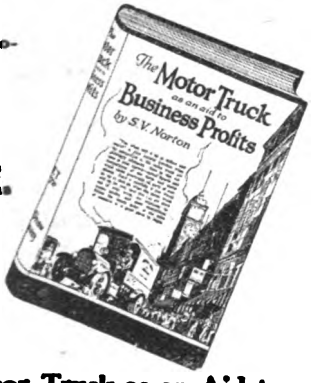

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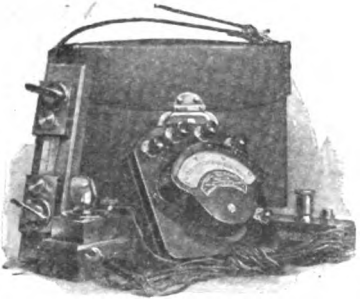

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ANTI-RATTLERS, Door (Continued)

Ternstedt Mfg. Co., Artillery & Muster Ave., Detroit, Mich. (See page 799.)

Universal Products Co., 908 W. Chicago Ave., Chicago, Ill.

Williams, Franklin, 263 Jefferson St., Newark, N. J. "Frantzen." (See page 163.)

ANTI-RATTLERS, Door, for Fords

(Rubber or Spring Bumpers to prevent rattling of car doors)

Fernald Mfg. Co., North East, Pa. "Little B-R-A-T-S."

Little B-R-A-T-S—See Fernald Mfg. Co.

Mosco—See Motor Specialties Co.

Motor Specialties Co., Waltham, Mass. "Mosco."

ANTI-RATTLERS, MUD GUARD, FOR FORDS—See Braces, Mud Guard

ANTI-RATTLERS, OVERHEAD VALVE—See Silencers, Overhead Valve

ANTI-RATTLERS, Radius Rod, for Fords

(Adjustable cap to take place of solid cap on end of radius rod to permit taking up wear and so prevent rattling)

Apco Mfg. Co., Providence, R. I.

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.

Illinois Brass Mfg. Co., 224-30 W. Ontario St., Chicago, Ill.

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

Mosco—See Motor Specialties Co.

Motor Specialties Co., Waltham, Mass. "Mosco."

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)

Peru Brass & Mfg. Co., Peru, Ind.

ANTI-RATTLERS, Spark and Throttle Rod, for Fords

Affa Specialty Co., 34 Southbridge St., Worcester, Mass.

ANTI-RATTLERS, Spindle Arm, for Fords

(Small steel springs to place between spindle arm cross yoke end to prevent rattling)

Affa Specialty Co., 34 Southbridge St., Worcester, Mass.

Apco Mfg. Co., Providence, R. I.

Dunham Co., Thomas, Aurora, Ill. (See page 167.)

Eclipse Machine Co., Elmira, N. Y. (See page 525.)

King Pressed Steel & Mfg. Co., 13 Hawthorne St., Newton, Mass.

Kraeuter & Co., Newark, N. J. (See page 711.)

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

Sanborn Mfg. Co., J. W., Hampstead, N. H.

Simmons Mfg. Co., 3405-11 Perkins Ave., Cleveland, O.

ANTI-RATTLERS, STEERING COLUMN, FOR FORDS—See Braces, Steering Column

ANTI-RATTLERS, Steering Rod, for Fords

(Adjustable spring cap to take place of solid cap on end of steering rod to permit taking up wear and so prevent rattling)

American Auto Products Co., 240-44 S. Broadway, Denver, Colo. "Little Giants."

Apco Mfg. Co., Providence, R. I.

B. A. T. Co., Germantown & Stenton Aves., Philadelphia, Pa. "Panther."

Fernald Mfg. Co., North East, Pa. "Steer-Aid."

Handy Mfg. Co., 15 Library St., Grand Rapids, Mich.

Humboldt—See Republic Auto Parts Co.

Jessop & Thompson, 1421 S. Michigan Ave., Chicago, Ill. (Sole Distributors for U. S. Automatic Spring Co., Napoleon, O.) "Superior."

Little Giants—See American Auto Products Co.

Mosco—See Motor Specialties Co.

Motor Specialties Co., Waltham, Mass. "Mosco."

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)

Panther—See B. A. T. Co.

Republic Auto Parts Co., 31-35 Tenth St., Long Island City, N. Y. "Humboldt."

S & H. Anti Rattler Co., Liverpool, Pa.

Steer-Aid—See Fernald Mfg. Co.

Superior—See Jessop & Thompson.

Towle Mfg. Co., Portland, Me.

U. S. Automatic Spring Co.—See Jessop & Thompson.

Whitehouse Mfg. Co., 42 Elm St., Newark, N. J. (See page 637.)

ANTI-SKIDS TIRE—See Bands, Non-Skid Truck

ANTI-SQUEAK, BODY—See Lining, Body or Frame

APPARATUS, Aircraft Oxygen

Prouty—See Van Sicklen Co.

Van Sicklen Co., Elgin, Ill. "Prouty." (See page 1105.)

APPLIERS, SKID-CHAIN—See Tools, Tire Chain Attaching

APRONS, Wash

Accurate Cover Co., 373 Canal St., New York, N. Y.

Anton & Ackermann Co., 132-34 Kansas Ave., Topeka, Kans.

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 321.)

B. E. Mfg. Co., 18 W. 18th St., New York, N. Y. "Bemco." (See page 321.)

Bailey-Drake Co., 1120 S. Michigan Ave., Chicago, Ill. (Sales Department for Defiance Welding Co., Defiance, O. "Boko.")

Bailey-Fitwell Co., 1318 S. Grand Ave., Los Angeles, Cal. "Fitwell."

Beardsley & Haft Co., Columbus, O. "Slip-In." (See page 255.)

Bemco—See B. E. Mfg. Co.

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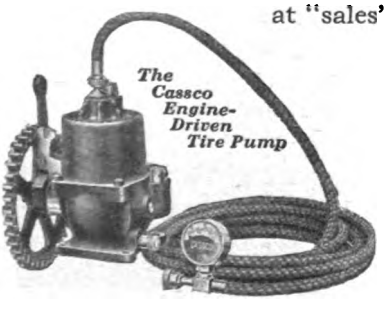

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APRONS, Wash (Continued)

Boko—See Bailey-Drake Co.

Boston Woven Hose & Rubber Co., Cambridge, Mass.

Co-Zee—See Omaha Auto Top Co.

Defiance Welding Co.—See Bailey-Drake Co.

Detroit Leather Works, 863 E. Lafayette Blvd., Detroit, Mich. (See page 125.)

Economy Seat Co., 3132-36 S. Canal St., Chicago, Ill. "Esco."

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 545.)

Esco—See Economy Seal Co.

Fitwell—See Bailey-Fitwell Co.

Fitzwell—See Niagara Fabric Mfg. Co.

Genesee Mfg. Co., 516-18 Harrison St., Flint, Mich.

Goodyear Rubber Co., 787 Broadway, New York, N. Y.

Hodes-Zink Mfg. Co., 312 W. State St., Fremont, O. "Sure-Fit."

Lockwood Mfg. Co., Kansas City, Mo. (See page 323.)

Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.

Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."

Omaha Auto Top Co., 709-11 S. Ninth St., Omaha, Nebr. "Co-Zee."

Powers Mfg. Co., Waterloo, Ia. (See page 593.)

Slip-In—See Beardsley & Haft Co.

Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo.

Sure-Fit—See Hodes-Zink Mfg. Co.

Tatco—See Thomas Auto Top Co.

Thomas Auto Top Co., 417 E. Jackson St., Muncie, Ind. "Tatco."

ARBOR PRESSES—See Presses, Arbor

ARBORS, EXPANDING—See Mandrels, Expanding

ARCH BARS—See Supports, Hood

ARCH PUNCHES—See Punches, Arch and Washer

ARMATURE WINDINGS—See Windings, Starter and Ignition

ARRESTERS, Tractor Spark

Yuba Mfg. Co., Marysville, Cal.

ARTIFICIAL LEATHER—See Leather, Artificial

ARTILLERY WHEELS—See Wheels, Wood

ASBESTOS BRAKE LINING CUTTERS——See Cutters, Brake Lining

ASBESTOS GASKETS—See Packing, Asbestos

ASBESTOS PACKING—See Packing, Asbestos

ASBESTOS, Sheet

(For Asbestos Packing—See Packing, Asbestos)

Ambesco—See American Asbestos Co.

American Asbestos Co., Norristown, Pa. "Ambesco." (See page 577.)

Autobestos—See Keasbey & Mattison Co.

Dugas-Hundley Corp., 29 W. 34th St., New York, N. Y. "Reliance."

J-M—See Johns-Manville Co.

Johns-Manville Co., H. W., Madison Ave. & 41st St., New York, N. Y. "J-M."

Keasbey & Mattison Co., Butler Ave., Ambler, Pa. "Autobestos."

Norristown Magnesia & Asbestos Co., Norristown, Pa.

Reliance—See Dugas-Hundley Corp.

Watson Co., H. F., Erie, Pa.

ASSEMBLIES, WIRING, FOR FORDS—See Sets, Wiring

ASSEMBLING CLAMPS FOR FORDS—See Clamps, Transmission Band Assembling

ASSEMBLY PLATES FOR FORDS—See Plates, Differential Assembly

ASSOCIATIONS AND SOCIETIES

(Comprising only Associations and Societies advertising in this publication)

Aerial League of America, 280 Madison Ave., New York, N. Y. (See page 1099.)

American Malleable Castings Association, 1900 Euclid Bldg., Cleveland, O. (See page 89.)

Automotive Wood Wheel Manufacturers' Association, 105 W. Monroe St., Chicago, Ill. (See page 763.)

ATTACHMENTS, DUMMY FRAME, FOR FORDS—See Extensions, Dummy Frame

ATTACHMENTS, KEROSENE, FOR FORDS—See Carburetors, Kerosene; also Heaters, Mixture; also Manifolds, Intake and Exhaust

ATTACHMENTS, Lathe Crankshaft Turning

Salter Motor Mfg. Co., 1516-18 Oakland Ave., Kansas City, Mo.

ATTACHMENTS, Lathe Cylinder Grinding

Acme—See Continental Grinder Co.

Britton, Arthur T., 590 S. First St., San Jose, Cal. "W & B."

Continental Grinder Co., 2848 Fremont Ave., S., Minneapolis, Minn. "Acme."

Salter Motor Mfg. Co., 1516-18 Oakland Ave., Kansas City, Mo.

W & B—See Britton, Arthur T.

Wood & Safford Machine Works, 13th St., Great Falls, Mont.

ATTACHMENTS, Lathe Milling

Bicknell Mfg. & Supply Co., 22 N. Academy St., Janesville, Wis.

Davis—See Hinckley Machine Works.

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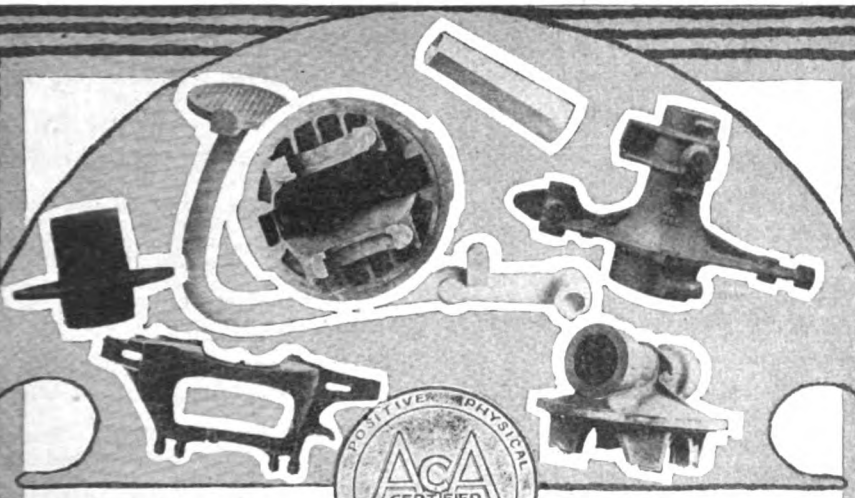

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Chicago Malleable Castings Co.,	West Pullman, Chicago, Ill.
Chisholm-Moore Mfg. Co.,	Cleveland, O.
Columbus Malleable Iron Co.,	Columbus, Ohio
Danville Malleable Iron Co.,	Danville, Ill.
Dayton Malleable Iron Co.,	Dayton, Ohio and Ironton, Ohio
Devlin Mfg. Co., Thomas	Philadelphia, Pa.
Eastern Malleable Iron Co.,	
Naugatuck Malleable Iron Works,	Naugatuck, Conn.
Bridgeport Malleable Iron Works,	Bridgeport, Conn.
Troy Malleable Iron Works,	Troy, N. Y.
Wilmington Malleable Iron Works,	Wilmington, Del.
Vulcan Iron Works,	New Britain, Conn.
Erie Malleable Iron Co.,	Erie, Pa.
Federal Malleable Co.,	West Allis, Wis.
Fort Pitt Malleable Iron Co.,	Pittsburgh, Pa.
Frazer & Jones Co.,	Syracuse, N. Y.
Globe Malleable Iron & Steel Co.,	Syracuse, N. Y.
Haskell & Barker Car Co.,	Michigan City, Ind.
Illinois Malleable Iron Co.,	Chicago, Ill.
Iowa Malleable Iron Co.,	Fairfield, Ia.
Kalamazoo Malleable Iron Co.,	Kalamazoo, Mich.
Marion Malleable Iron Works,	Marion, Ind.
National Malleable Castings Co.,	Cleveland, Ohio, Chicago, Ill., Indianapolis, Ind., Toledo, Ohio, E. St. Louis, Ill.
Northern Malleable Iron Co.,	St. Paul, Minn.
Northwestern Malleable Iron Co.,	Milwaukee, Wis.
Pittsburgh Malleable Iron Co.,	Pittsburgh, Pa.
Pressed Steel Car Co., (Western Steel Car & Fdy. Co.	Hegewisch, Ill.
Rhode Island Malleable Iron Works	Hillsgrove, R. I.
Rockford Malleable Iron Works,	Rockford, Ill.
Ross-Meehan Foundries,	Chattanooga, Tenn.
St. Louis Malleable Casting Co.,	St. Louis, Mo.
Stowell Co.,	South Milwaukee, Wis.
T. H. Symington Co.,	Rochester, N. Y.
Terre Haute Malleable & Mfg. Co.,	Terre Haute, Ind.
Vermilion Malleable Iron Co.,	Hoopeston, Ill.
Wanner Malleable Iron Co.,	Hammond, Ind.
Wisconsin Malleable Iron Co.,	Milwaukee, Wis.
Zanesville Malleable Co.,	Zanesville, Ohio

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The American Malleable Castings Association

1900 Euclid Building, Cleveland, Ohio.

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ATTACHMENTS, Lathe Milling (Continued)

Hinckley Machine Works, E. Lincoln Ave., Hinckley, Ill. "Davis."

Paschall Tool Co., Long Beach Bank Bldg., Long Beach, Cal.

Stark Tool Co., 218 Moody St., Waltham, Mass.

ATTACHMENTS, Magneto Mounting, for Fords

(Bracket and gear housing for attaching to Ford Motor to permit of the installation of any standard make of magneto)

Magneto Attachment Co., 4077 Park Ave., New York, N. Y. "Matco."

Matco—See Magneto Attachment Co.

ATTACHMENTS, MOTOR—See Wheels, Motor

ATTACHMENTS, Power Transmitting

(Attachment to permit of the use of the car motor for general power purposes)

Auto Utilizer Co., 606-12 S. Pine St., Burlington, Wis.

Elmberg Co., E. F., Beaver Valley Bank Bldg., Parkersburg, Ia. "Elmco."

Elmco—See Elmberg Co.

Lay Porta Power—See Young Industries.

Young Industries, L. A., 9200 Russell St., Detroit, Mich. "Lay Porta Power."

ATTACHMENTS, Power Transmitting, for Fords

(Attachment to permit of the use of the car motor for general power purposes)

Andrew Motor Mfg. Co., 533-51 30th St., Milwaukee, Wis.

Ashland Products Co., 50 E. Ninth St., Ashland, O. (See page 539.)

Auto Utilizer Co., 606-12 S. Pine St., Burlington, Wis.

BB—See Bayne Mfg. Co.

Bayne Mfg. Co., Bushnell, Ill. "B. B." (See page 725.)

Fremont Foundry & Feed Mill Co., Oklahoma City, Okla.

Hickey, D. S., 40 Iffley Rd., Boston, Mass

Ita Manufacturers, Glen Ellyn, Ill.

McCargar Mfg. Co., L. B., 14th & Charlotte St. (N. Kansas City), Kansas City, Mo.

Shaw, Welsh & Co., Galesburg, Ill.

Simplicity Mfg. Co., 1981 E. 97th St., Cleveland, O.

Star—See Winters, E. B.

Winters, E. B., Coffeyville, Kans. "Star."

ATTACHMENTS, STEERING GEAR—See Checks, Steering Gear

ATTACHMENTS, Tilting Wheel for Fords

Warner Electric Co., 2507 S. Walnut St., Muncie, Ind. "Wheeltilts."

Wheeltilts—See Warner Electric Co.

ATTACHMENTS, TIMER ELEVATING, FOR FORDS—See Brackets, Timer Elevating

ATTACHMENTS, TRACTOR, FOR FORDS—See Converters, Chassis

ATTACHMENTS, TRUCK—See Converters, Chassis

ATTORNEYS, Patent

(Comprising only Patent Attorneys advertising in this publication)

Sweet & Sinclair, 510 Polk Bldg., Des Moines, Ia. (See page 91.)

AUTOGENOUS WELDING—See Welding, Autogenous

AUTOGENOUS WELDING MACHINES—See Machines, Autogenous Welding

AUTOGRAPHIC REGISTERS—See Registers, Autographic and Manifold

AUTOMATIC AIRPLANE IGNITION INTERRUPTERS—See Interrupters, Automatic Airplane Ignition

AUTOMATIC CRANK RELEASERS FOR FORDS—See Cranks, Safety Starting

AUTOMATIC DISENGAGING TRACTOR HITCHES—See Hitches, Automatic Disengaging Tractor

AUTOMATIC DUMPING BODIES, FOR FORDS—See Bodies, Automatic Dumping

AUTOMATIC GEAR SHIFTERS—See Shifters, Automatic Gear

AUTOMATIC HEADLIGHT BRACKETS—See Brackets, Automatic Headlight

AUTOMATIC HOSE REELS—See Reels, Automatic Hose

AUTOMATIC QUICK STOP TRACTOR HITCHES—See Hitches, Automatic Quick Stop Tractor

AUTOMATIC RADIATOR COVERS—See Covers, Automatic Radiator

AUTOMATIC RADIATOR SHIELDS—See Covers, Automatic Radiator

AUTOMATIC REELS—See Reels, Automatic Extension Lamp

AUTOMATIC RELEASE CLEVISES—See Hitches, Automatic Tractor Release

AUTOMATIC SCREW MACHINES—See Machines, Screw

AUTOMATIC SPARK RETARDERS FOR FORDS—See Retarders, Automatic Spark

AUTOMATIC TRACTOR HITCHES—See Hitches, Automatic Disengaging Tractor

AUTOMOBILES, GASOLINE, STEAM AND ELECTRIC—See Section I

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TRAILER AXLES

Equipped with Hubs and Timken Roller Bearings

ALL SIZES

1⅛ inch to 3 inch. Round, Rectangular or Square, any track desired.

CONTRACT MACHINE WORK

The Auto Engineering Company
429-431 Bagg Street
Detroit, Mich.

Your Idea Developed Your Patent Sold

This Company specializes in the development of ideas—in simplifying designs and making them practical for manufacture.

We secure and sell patents.

Ask for our list of specialties. You may find in it just the article you have been looking for. Manufacturers can buy patents or arrange for production on a royalty basis.

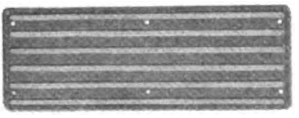
OGDEN MFG. CO.
506 Polk Bldg., Des Moines, Iowa

Inquiries regarding the scope and validity of patents promptly answered

SWEET & SINCLAIR
Solicitors of Patents
510 Polk Bldg., Des Moines, Iowa

Stanwood Products

ADJUSTABLE ACCELERATOR FOOT REST, a reliable safety device. Prevents unintentional acceleration when driving over rough roads. Permits delicate advancement or retarding of accelerator. Relieves foot tension. Adjustable to driver's comfort, adaptable to all automobiles. List, $1.00 each.



ACCELERATOR HEEL PLATE is same as Type C Step Plate, except in size, which is 4x11½ inches. Furnishes a stable position for heel of shoe when operating pedal, and protects floor covering. List, $0.35.

SAFETY STEP PLATES, rubber vulcanized to a perforated metal plate, 24 projecting solid rubber ribs. Size 8x11½ inches. Keeps car clean. Assures safety. Adds to car refinement. Quickly applied. Will not mat down or discolor. Type C, List, $1.00.

CONFORMABLE HAND PAD for auto doors, consists of a ductile metallic sheet enclosed between front and back leather sections of the pad, insuring through pressure of the hand, perfect conformity to the contour of door. Prevents finger marks and wear. Leather in various grains. Price $0.90 to $1.80 each.

STANWOOD EQUIPMENT COMPANY
308 NO. MICHIGAN BLVD. CHICAGO, ILL.

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AUTOMOBILES, Second Hand, Dealers in

M. & M. Co., 109-23 W. 64th St., New York, N. Y. (See page 63.)

AUXILIARY AIR VALVES—See Mixers, Fuel

AUXILIARY SPRINGS—See Springs, Supplementary

AUXILIARY TRACTOR CONTROLS—See Controls, Auxiliary Tractor

AUXILIARY TRANSMISSION GEARS FOR FORDS—See Gears, Auxiliary Transmission

AUXILIARY WIND SHIELDS—See Shields, Auxiliary Wind.

AVIATORS' CLOTHING—See Clothing, Aviators'; also Clothing, Electrically Heated Aviators

AVIATORS' GLOVES—See Gloves and Mittens, Aviators'

AVIATORS' MITTENS—See Gloves and Mittens, Aviators'

AVIATORS' PUTTEES—See Puttees, Aviators'

AXES, Motorists'

Bur-Nor—See Burgess-Norton Mfg. Co.

Burgess-Norton Mfg. Co., Geneva, Ill. "Bur-Nor." (See page 735.)

AXLE BEARING SLEEVE PULLERS FOR FORDS—See Pullers, Axle Bearing Sleeve

AXLE BINDERS—See Bars, Axle Straightening

AXLE BUSHINGS FOR FORDS—See Bushings, Bronze

AXLE END MILLS—See Mills, Steering Knuckle Bushing, for Fords

AXLE ENDS—See Forgings, Drop

AXLE GREASE RETAINERS FOR FORDS—See Retainers, Rear Axle Grease

AXLE HOUSING PULLERS FOR FORDS—See Pullers, Axle Housing

AXLE SHAFTS—See Shafts, Rear Axle

AXLE SPINDLES FOR FORDS—See Spindles, Emergency Rear Axle

AXLE STRAIGHTENING BARS—See Bars, Axle Straightening

AXLE TAPER SHIMS FOR FORDS, REAR—See Shims, Rear Axle, Taper

AXLE TRUSS RODS FOR FORDS—See Rods, Rear Axle Truss

AXLES, EMERGENCY REAR FOR FORDS—See Spindles, Emergency Rear Axle for Fords

AXLES, Front

(Finished or Machined Axles; for Axle Forgings—See Forgings, Drop)

Adams Axle Co., Findlay, O. (See page 165.)

American Machine Co., Newark, Del.

Anchor—See Sheldon Axle & Spring Co.

Cameron Motors Corp., 2 Columbus Circle, New York, N. Y. (See page 397.)

Columbia Axle Co., Cleveland, O. (See page 93.)

Continental Axle Co., Edgerton, Wis.

Eaton—See Standard Parts Co.

Flint Motor Axle Co., Flint, Mich. (See page 95.)

Gill & Sons Forge & Machine Works, P. H., Lorraine & Otsego Sts., Brooklyn, N. Y.

Higgins Spring & Axle Co., Dept. 115, Racine, Wis. "Quality." (See page 1197.)

Ladish Drop Forge Co., Cudahy, Wis. (See page 423.)

Lewis Spring & Axle Co., 42 Hollier St., Chelsea, Mich.

Peru Auto Parts Mfg. Co., Peru, Ind. (See page 283.)

Quality—See Higgins Spring & Axle Co.

Russel Motor Axle Co., North Detroit, Mich.

Salisbury Axle Co., Jamestown, N. Y. (See page 1086.)

Savage Arms Corp., Sharon, Pa.

Sheldon Axle & Spring Co., Wilkes-Barre, Pa. "Anchor." (See pages 758 and 759.)

Shuler Axle Mfg. Co., Jones & N Sts., Louisville, Ky.

Spacke Machine & Tool Co., 600 Madison Ave., Indianapolis, Ind.

Stan-Par—See Standard Parts Co.

Standard Parts Co., Cleveland, O. "Stan-Par," "Eaton." (See page 1149.)

Timken-Detroit Axle Co., 100-320 Clarke Ave., Detroit, Mich.

Torbensen Axle Co., E. 152d St., Cleveland, O.

U. S. Axle Co., Pottstown, Pa.

Vulcan Motor Axle Corp., Detroit, Mich. (See page 97.)

Wisconsin Gear & Axle Co., State St. & Hawley Rd., Wauwatosa, Wis.

AXLES, Rear

(Complete Rear Axle Units; for Axle Parts—See Specific Article)

Adams Axle Co., Findlay, O. "Simplex." (See page 165.)

American Machine Co., Newark, Del.

Anchor—See Sheldon Axle & Spring Co.

Atlas Axle Co., Lowell, Ind.

Bridgeport Engineering Co., Bridgeport, Conn.

Cameron Motors Corp., 2 Columbus Circle, New York, N. Y. (See page 397.)

Central Axle Co., Holbrook & G. T. R. R., Detroit, Mich.

Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representative.) (See page 345.)

Chicago Standard Axle Co., Monroe Bldg., Chicago, Ill. "Standard."

Clark Equipment Co., Buchanan, Mich.

Columbia Axle Co., Cleveland, O. (See page 93.)

Continental Axle Co., Edgerton, Wis.

Cross Gear & Engine Co., 3260 Bellevue Ave., Detroit, Mich. (See page 1191.)

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COLUMBIA

Safe!—*Thanks to what?*

A CITY STREET at a quiet noon. All clear ahead—rushing to make a train.

Then from a side street an absent-minded car noses into your path. A sudden sharp turn; wheels locked, a half-circle skid and you bring up against the curb.

Safe!

Thank the brakes. Thank the wheels. But most of all, thank the rear axle, for it ***held*** the brakes and the wheels, it resisted the impact of the curb, it withstood the antagonistic twistings and turnings of terrific forces exerted simultaneously; and it was ready to deliver the engine's power the moment you were ready to go on again.

Vitally important—the rear axle—no other part of the car has such a multitude of duties or so many antagonistic forces to resist! Wouldn't you say it deserved the whole attention of an organization of specialists?

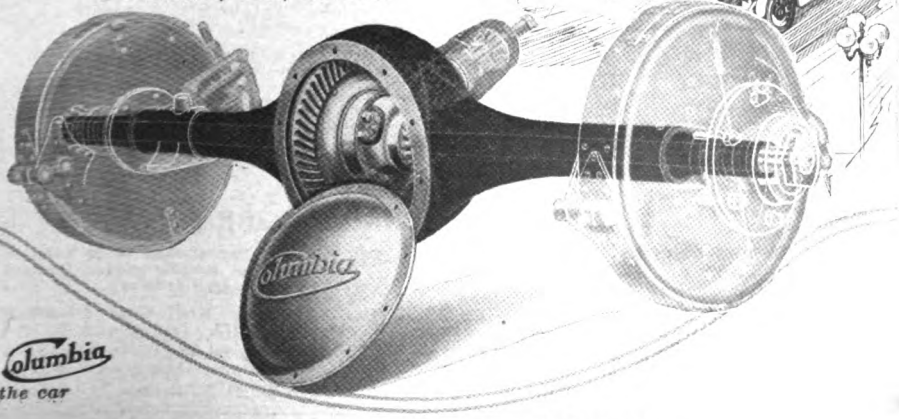
We believe so. From the beginning of our association, we have acted on this belief. We have devoted all our energies, our thought, our resources to the building of axles.

The result is that there is not an incident that can occur in motoring which affects the axle that we have not endeavored to foresee and prepare for. Therefore, the owner of a car equipped with a Columbia One-piece-housing Rear Axle has a feeling of unusual confidence and comfort.

The Columbia trade-mark appears on the plate covering the differential housing—look for it.

Columbia Axle Company
Cleveland, Ohio, U. S. A.

THE Columbia Rear Axle Housing is built in one piece, which our tests show adds 50% to its torsional strength. Extra large and strong brake drums, differential and driving shafts complete the distinctive strength and safety of the Axle as a whole. Columbia Front Axles are equally strong and safe.



Look for Columbia *under the car*

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AXLES, Rear (Continued)

Dunkirk Axle Corp., Dunkirk, N. Y. (See page 1183.)

Eaton—See Standard Parts Co.

Edwards Valve & Mfg. Co., E. Chicago, Ind.

Flint Motor Axle Co., Flint, Mich. (See page 95.)

Hero Mfg. Co., 23rd & Westmoreland Sts., Philadelphia, Pa. "Kennedy."

Hindley Gear Co., 1105 Frankford Ave., Philadelphia, Pa.

Iron Mountain Co., 927 E. 95th St., Chicago, Ill. (See page 776.)

Kennedy—See Hero Mfg. Co.

Kenosha Wheel & Axle Co., Kenosha, Wis.

Keystone-Hindley Gear Co., 20th St. & Indiana Ave., Philadelphia, Pa.

L. M. Axle Co., 231 Colonial Arcade, Cleveland, O.

Lewis Spring & Axle Co., 42 Hollier St., Chelsea, Mich.

National Axle Co., Benton Harbor, Mich.

Parker Axle & Product Corp., 19 W. 44th St., New York, N. Y.

Peru Auto Parts Mfg. Co., Peru, Ind. (See page 283.)

Russel Motor Axle Co., North Detroit, Mich.

Salisbury Axle Co., Jamestown, N. Y. (See page 1086.)

Savage Arms Corp., Sharon, Pa.

Sheldon Axle & Spring Co., Wilkes-Barre, Pa. "Anchor." (See pages 758 and 759.)

Simplex—See Adams Axle Co.

Spacke Machine & Tool Co., 600 Madison Ave., Indianapolis, Ind.

Stan-Par—See Standard Parts Co.

Standard—See Chicago Standard Worm Drive Axle Co.

Standard Parts Co., Cleveland, O. "Stan-Par," "Eaton." (See page 1149.)

Thompson, James & Co., 516 Fifth Ave., New York, N. Y.

Thomson Press Co., John, 253 Broadway, New York, N. Y.

Timken-Detroit Axle Co., 100-320 Clarke Ave., Detroit, Mich.

Torbensen Axle Co., E. 152d St., Cleveland, O.

U. S. Axle Co., Pottstown, Pa.

Vulcan Motor Axle Corp., Detroit, Mich. (See page 97.)

Walker Axle Co., 72 W. Adams St., Chicago, Ill.

Wisconsin Gear & Axle Co., State St. & Hawley Rd., Wauwatosa, Wis.

Wisconsin Parts Co., Oshkosh, Wis. (See page 1173.)

AXLES, REAR, FOR FORDS—See Axles, Worm Drive, Rear

AXLES, Special Trailer

(Finished or Machined Trailer Axles; for Trailer Axle Forgings—See Forgings, Drop)

Adams Axle Co., Findlay, O. (See page 165.)

American Axle Co., 12th St. & Montgomery Ave., Philadelphia, Pa.

Auto Engineering Co., 429-31 Bagg St., Detroit, Mich. (See page 91.)

Concord Axle Co., Penacook, N. H.

Continental Axle Co., Edgerton, Wis.

Flint Motor Axle Co., Flint, Mich. (See page 95.)

Martin Rocking Fifth Wheel Co., P. O. Box 1244F, Springfield, Mass. (See page 1065.)

Shuler Axle Mfg. Co., Jones & N Sts., Louisville, Ky.

AXLES, Tractor

(See also Axles, Front; also Axles, Rear)

Adams Axle Co., Findlay, O. (See page 165.)

Flint Motor Axle Co., Flint, Mich. (See page 95.)

Milwaukee Forge & Machine Co., Milwaukee, Wis. (See pages 631 and 691.)

Sheeler Axle Mfg. Co., Jones & N. Sts., Louisville, Ky.

Torbensen Axle Co., E. 152d St., Cleveland, O.

AXLES, TRAILER—See Axles, Special Trailer

AXLES, Worm Drive Rear, for Fords

McIntyre Motor Products Co., 5711 Wentworth Ave., Chicago, Ill.

BABBITT BEARINGS—See Metals, Bearing

BABBITT-LINED BRONZE BEARINGS—See Bearings and Bushings

BABBITT-LINED BRONZE BUSHINGS—See Bearings and Bushings

BABBITT MELTING FURNACES—See Furnaces, Babbitt Melting

BABBITT METAL—See Metals, Bearing

BABBITTING JIGS—See Jigs, Main Bearing Connecting Rod Babbitting

BABY HAMMOCKS—See Hammocks, Baby

BACK RESTS—See Rests, Cushion Back; also Rests, Motorcycle Back

BACKS, Metal Seat

(For Wood Seat Backs—See Bendings, Wood)

American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "3 A."

Cornwall Mfg. Co., Cleveland, O. (See page 951.)

Mullins Body Corp., 182 Franklin Ave., Salem, O.

Sheet Steel Products Co., Bryan, O.

3A—See American Automobile Accessories Co.

BAGS, Coat Rail

(Small Fabric or Leather Bags to be hung on Robe or Coat Rails for carrying gloves, goggles or other articles)

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 321.)

B. E. Mfg. Co., 18 W. 18th St., New York, N. Y. "Bemco." (See page 321.)

Bemco—See B. E. Mfg. Co.

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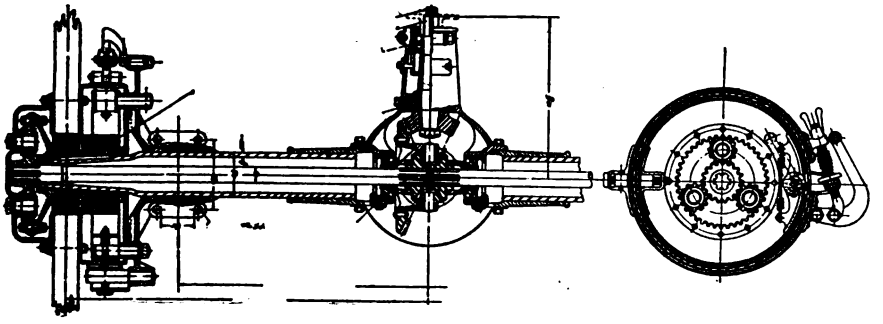
"FLINT DRIVE" TRUCK AXLES

"Built for Hard Work"



A DISTINCTIVE type which has all the good features of the worm drive as well as the internal drive and is free from the disadvantages of each.

Specifications

Tread, 56".
Carrying capacity on spring seats, 3300 lbs.
Spring seat centers, 40" max., 38" min., 39" standard for 2½" width, ⅝" clips.

GEARS—Gear Ratio, 7⅛ to 1 to 3.8 to 1 total reduction.
Bevel gear ratio, 2.14 to 1 to 2.647 to 1.
Internal gear ratio, 3.33 to 1.
6-8 pitch internal gears, ¾" face.
5 pitch bevel gears, 1¼" face.
Hardened steel, cut gears, used throughout.

BRAKES—14" dia. x 2½" wide toggle external contracting type and cam internal expanding type.

BEARINGS—Hyatt high duty roller bearings in wheels and at position directly back of pinion on pinion shaft and on differential. New Departure ball bearings at outer end of pinion shaft.

SHAFTS—Extra strong, made from chrome nickel steel splined on both ends and heat-treated.

FLINT MOTOR AXLE CO.

Successors to

WALKER-WEISS AXLE CO.

FLINT, MICHIGAN

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BAGS, Coat Rail (Continued)

Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 321.)

Powers Mfg. Co., Waterloo, Ia. (See page 593.)

BAGS, GAS—See Bags, Rubber Gas

BAGS, GREASE—See Boots, Steering Knuckle

BAGS, INNER TUBE—See Cases, Tire

BAGS, Luggage, for Fords

(For attaching to back of front seats)

Atlas Specialty Mfg. Co., 16-22 E. 24th New York, N. Y. (See page 321.)

Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 321.)

BAGS, MAILING—See Bags, Shipping

BAGS, ROBE RAIL—See Bags, Coat Rail

BAGS, Rubber Gas

(Small Rubber Bags to be attached to Acetylene Head lights to equalize the flow of gas to the lamp and prevent flickering)

Davol Rubber Co., Providence, R. I.

Indiana Rubber & Insulated Wire Co., Jonesboro, Ind.

Mechanical Rubber Co., C. & P. & Nickel Plate R. R., Cleveland, O.

BAGS, Shipping

Ames Bag Machine Co., 5606 Euclid Ave., Cleveland, O. "Amesacks."

Amesacks—See Ames Bag Machine Co.

Bemis Bro. Bag Co., 601-25 S. Fourth St., St. Louis, Mo. "Two-in-one."

Bull Dog—See National Bag Co.

Central Bag Mfg. Co., 3622-30 Iron St., Chicago, Ill.

Champion Bag Co., 210 E. 23rd St., New York, N. Y.

Chase Bag Co., 4-26 N. Main St., St. Louis, Mo.

Cleveland-Akron Bag Co., Cleveland, O. (See page 101.)

Crown Paper & Bag Co., 405-07 Liberty St., Jackson, Mich.

Goss Co., J. C., 20 E. Woodbridge St., Detroit, Mich.

Milwaukee Bag Co., 206-20 S. Water St., Milwaukee, Wis. "Red Top."

National Bag Co., 71 Washington St., Naperville, Ill. "Bull Dog."

National Mailing Device Co., Manhattan Bldg., Kansas City, Mo.

Red Top—See Milwaukee Bag Co.

Troy Carriage Sunshade Co., 710 Lincoln Ave., Troy, O.

Two-in-one—See Bemis Bro. Bag Co.

BAGS, Steam Tire Curing

American Rubber & Tire Co., 100 Beech St., Akron, O.

K. A. R. Rubber Co., 110 W. Tenth St., West New York N. J.

Perpetual Air Bag Co., 2103 S. Michigan Ave., Chicago, Ill.

Steam Bag Corp., 1545-47 Broadway, Denver, Colo.

"20th Century"—See Steam Bag Corp.

BAGS, TUBE—See Covers, Spare Tire

BAGS or ROLLS, Tool

(For Tool Boxes—See Boxes, Tool)

Accurate Cover Co., 373 Canal St., New York, N. Y.

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 321.)

Auburn Leather Goods Co., 8 Miller St., Auburn, N. Y.

B. E. Mfg. Co., 18 W. 18th St., New York, N. Y. "Bemco." (See page 321.)

Bemco—See B. E. Mfg. Co.

Bemis Bro. Bag Co., 601-25 S. Fourth St., St. Louis, Mo.

Campbell—See Perkins Campbell Co.

Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.

Co-Zee—See Omaha Auto Top Co.

Dafoe-Eustice Co., 4042 W. Jefferson Ave., Detroit, Mich. "Duk-Bak," "Deco," "Ustus."

Deco—See Dafoe-Eustice Co.

Detroit Leather Works, 863 E. Lafayette Blvd., Detroit, Mich. (See page 125.)

Duk-Bak—See Dafoe-Eustice Co.

Economy Stay Co., Jefferson City, Mo.

Edelstone Fabric Co., Wm. W., 25 Thorndike St., Cambridge, Mass. "Wedco." (See page 563.)

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 545.)

Excelsior Bag & Mfg. Co., Troy, N. Y.

Feeser Co., Frank S., 1102 Prospect St., Indianapolis, Ind. "Superior."

Fitzwell—See Niagara Fabric Mfg. Co.

Goss Co., J. C., 20 E. Woodbridge St., Detroit, Mich.

Landers Bros. Co., Dept. A2, Toledo, O. (See page 605.)

Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 321.)

Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."

Omaha Auto Top Co., 709-11 S. 15th St., Omaha, Neb. "Co-Zee."

Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. "Campbell." (See page 317.)

Planet Co., 180 N. Elm St., Westfield, Mass.

Powers Mfg. Co., Waterloo, Ia. (See page 593.)

Premier Auto Novelty Mfg. Co., 375 W. Broadway, New York, N. Y.

Prince Auto Fabric Mfg. Co., 4101 Fort Hamilton Ave., Brooklyn, N. Y.

R. C. Fabric Co., 1383 Bedford Ave., Brooklyn, N. Y.

R-E—See Roose Mfg. Co.

Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E." (See pages 129, 151, 325 and 327.)

Springfield Harness Co., 55-59 Dwight St., Springfield, Mass.

Superior—See Feeser Co.

Ustus—See Dafoe-Eustice Co.

Wedco—See Edelstone Fabric Co.

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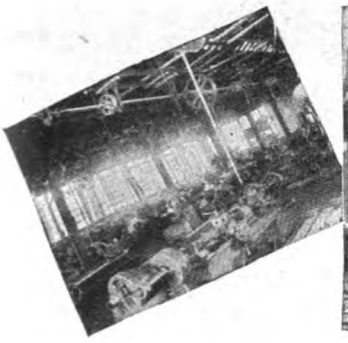

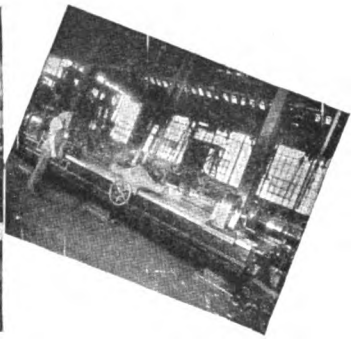

Vulcan Motor Axles Are in Production

Three months ago announcement was made of the Vulcan Motor Axle Corporation.

At that time a factory had been acquired and machinery purchased.

It is a pleasure to announce that this large and modernly equipped factory is today in operation.

It is not surprising that these rapid strides have been made. The personnel of the Corporation is composed of men who have been in constant successful association with one another for many years as principals in one of the biggest producing axle concerns. These men know the axle business in such a way as to eliminate any lost motion in manufacturing.

Moreover, these men are intensely gratified at the reception already accorded the Vulcan Motor Axle Corporation. The anouncement of an axle concern whose primary functions would be to build better axles, form a dependable source of axle supply and carry on business with the utmost of co-operation and courtesy has found an instant appeal among the users of this equipment.

Vulcan Motor Axle Corporation
Detroit, Michigan

OFFICERS:

FREDERICK C. GILBERT
President and Treasurer

SIDNEY C. LOVE
Vice-President, Sales

R. B. WEAVER
Vice-President, Production

C. C. MILLER
Vice-President

JOHN T. HANLON
Secretary

R. B. BEECHLER
Chief Engineer

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BAGS, Water Carrying

(For carrying a supply of water on long trips; for Buckets or Pails for filling Radiators—See Buckets, Collapsible)

Burch Mfg. Co., F. J., First St. & Santa Fe Ave., Pueblo, Colo.

Egyptian—See Whitaker Mfg. Co.

Red Seal—See Schaefer Tent & Awning Co.

Schaefer Tent & Awning Co., Denver, Colo. "Red Seal." (See page 117.)

Whitaker Mfg. Co., Chicago, Ill. "Egyptian." (See page 1177.)

BAILERS, Motor Boat Automatic Bilge

(See also Pumps, Engine Driven Bilge)

Automatic Bilge Bailer Co., 900 Beacon St., Brookline, Mass. "Hitchcocks."

Hitchcocks—See Automatic Bilge Bailer Co.

BALANCING MACHINES—See Machines, Balancing

BALANCING WAYS—See Ways, Balancing

BALL BEARINGS—See Bearings, Ball

BALL BEARINGS, REGROUND—See Bearings, Reground Ball

BALL CHECK VALVES—See Valves, Ball Check

BALL CONES—See Cups, Ball

BALL CUPS—See Cups, Ball

BALL JOINTS—See Joints, Ball

BALL RACES—See Cups, Ball

BALL RETAINERS—See Retainers, Ball

BALL SOCKETS FOR FORDS—See Anti-Rattlers

BALL THRUST BEARINGS FOR FORDS—See Bearings, Drive Gear Ball Thrust and Roller

BALLOONS, DIRIGIBLE—See Section I

BALLOONS, Spherical

American Dirigible Balloon Syndicate, 25 W. 43d St., New York, N. Y.

Coquot—See Connecticut Aircraft Co.

Connecticut Aircraft Co., 117 Court St., New Haven, Conn. "Coquot."

Knabenshue Aircraft Corp., 140 W. 42d St., New York, N. Y.

BALLS, Composition Control Lever

(Moulded Composition Balls or Knobs for Gear Shift Levers)

Alco—See American Insulator Co.

American Insulator Corp., New Freedom, Pa. "Alco." (See page 913.)

Belden Mfg. Co., 2300 South Western Ave., Chicago, Ill. (See page 1171.)

Garfield Mfg. Co., Garfield, N. J.

International Insulating Corp., ft. Mechanic St., Springfield, Mass.

Pouvailsmith Corp., Smith St., Poughkeepsie, N. Y.

BALLS, Steel

(For use in Ball Bearings; for complete Bearings—See Bearings, Ball)

Abbott Ball Co. (Elmwood), Hartford, Conn.

Atlas—See SKF Industries, Inc.

Auburn Ball Bearing Co., 27 Elizabeth St., Rochester, N. Y. (See page 239.)

Bemco Mfg. Co., 368 W. 50th St., New York, N. Y. (See page 227.)

Bryce Mfg. Co., Academy St., Forestville, Conn.

C. & C. Sales Corp., 1755 Broadway, New York, N. Y. (Importers.) (See page 505.)

Gwilliam Co. 23 Flatbush Ave., Brooklyn, N. Y. (Dealers.) (See page 177.)

Hoover Steel Ball Co., Ann Arbor, Mich. (See page 99.)

McIntyre Machine Works, 78 Grove St., Hartford, Conn.

Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y.

Metal Specialty Mfg. Co., E. Aurora St., Waterbury, Conn. "Wamsco."

Michigan Bearings Co., 1311 Woodward Ave., Detroit, Mich. (Dealers.) (See page 333.)

SKF Industries, Inc., 165 Broadway, New York, N. Y. "Atlas." (See page 115.)

Wamsco—See Metal Specialty Mfg. Co.

BAND ASSEMBLING CLAMPS FOR FORDS—See Clamps, Transmission Band Assembling

BAND BRAKES—See Brakes, Expanding and Contracting

BAND SAWS—See Saws, Band

BANDAGE WRAPPING MACHINES—See Machines, Tire Bandage Wrapping

BANDING, BRAKE—See Lining, Brake

BANDING CUTTERS—See Cutters, Brake Lining

BANDING TRANSMISSION FOR FORDS—See Lining, Brake

BANDS, Non-Skid Truck

(Detachable Metal Bands or Rims with Lugs to apply to Truck Wheels to prevent skidding and to give traction; for other Anti-Skid Devices—See Chains, Tire; Boxes, Sand; also Treads Detachable)

Foley Traction Rim Co., 827 Hennepin Ave., Minneapolis, Minn.

BANDS, TIRE REPAIR—See Sleeves, Tire Repair

BANDS, Transmission, for Fords

(Steel band with lugs attached for low speed and reverse gears and for transmission brake)

Demountable Non-Chatter Band Co., 2 Columbus Circle, New York, N. Y.

Duplex Transmission Co., 3159 Army St., San Francisco, Cal.

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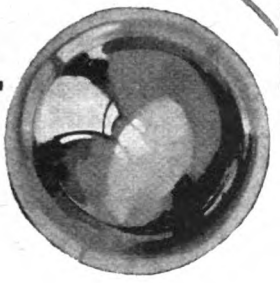
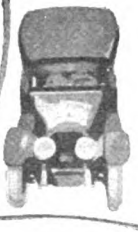
HOOVER STEEL BALLS





BOTH speed and safety can be enjoyed when Hoover balls are used to liven bearing surfaces.

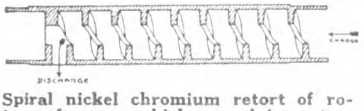
Their highly polished flawless finish and their absolute sphericity permit the highest speed because they prevent the theft of precious power by friction.

The use of bearings built on Hoover balls lets speed be made with safety, too. For such unusual care controls their manufacture that Hoover balls display a uniform load capacity surpassed by no other ball of equal dimensions.

HOOVER STEEL BALL CO.
ANN ARBOR, MICH.

Branch Offices:
Chicago, Cleveland, New York, San Francisco

Southern Representatives:
Sanford Brothers, Chattanooga, Tenn.



Spiral nickel chromium retort of rotary furnace which, revolving at a predetermined speed, discharges the balls heated to the proper temperature. Both feeding and discharging operations are automatic and continuous. The entire heat treating operation is electrically controlled. (4)

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BANDS, Transmission, for Fords (Continued)

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 174 and 175.)
Leader Skid Chain Co., 4104 Manchester Ave., St. Louis, Mo.
Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

BANKERS—See Brokers and Bankers

BANKING INDICATORS, AEROPLANE—See Indicators, Banking

BAR CUTTERS—See Cutters, Rod and Bar

BAR SOLDER—See Solder, Bar and Wire

BAR STEEL—See Steel

BAROGRAPHS, Aircraft Recording

(See also Altimeters; also Barometers)

Green, Henry J., 1191 Bedford Ave., Brooklyn, N. Y.

BAROMETERS, Aircraft

(See also Altimeters; also Barographs)

Rieker Instrument Co., 1919-21 Fairmount Ave., Philadelphia, Pa.
Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.
Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.

BAROMETERS, Altitude Indicating

(For Dash Attachment)

Bernard, F. J., 64 Murray St., New York, N. Y.
Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.

BARREL EMPTYING PUMPS—See Pumps, Barrel Emptying

BARREL HOLDERS—See Holders or Tippers, Oil Can and Barrel

BARRELS, SHOP—See Boxes, Sheet Metal Tote

BARS, ARCH—See Supports, Hood

BARS, Axle Straightening

Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill.) (See pages 137 to 140.)
Railway Specialty Co., Atchison, Kans.
Service Station Equipment Co.-See Fairbanks Co.
Littell Machinery Co., 582-84 Washington St., Spokane, Wash.

BARS, Boring

(See also Tools, Portable Cylinder Boring)

Carr—See Thompson & Son Co.
Clough, R. M., Tolland, Conn.
Davis Boring Tool Co., 3700 Forest Park Blvd., St. Louis, Mo.
Detroit Garage Equipment Co., 406 E. Jefferson Ave., Detroit, Mich.
Expansion Boring Tool Co., 1444 Rivard St., Detroit, Mich.
Gatchell—See Mill City Co.
Gisholt Machine Co., 1315 E. Washington St., Madison, Wis.
Kelly Reamer Co., 3705 W. 73d St., Cleveland, O.
Krieger Tool & Mfg. Co., Seventh Ave., S., Grand Rapids, Wis.
Madison Mfg. Co., Spring & Elton Sts., Muskegon, Mich. (See page 117.)
Marvin & Casler Co., 118 Roberts St., Canastota, N. Y.
Mill City Co., Minneapolis, Minn. "Gatchell."
O. K. Tool Holder Co., Shelton, Conn.
Ready Tool Co., 624 Iranistan Ave., Bridgeport, Conn. "Red-E."
Red-E—See Ready Tool Co.
Rigid Tool Holder Co., 3322 Volta Pl., Washington, D. C.
Thompson & Son Co., Henry G., 277 Chapel St., New Haven, Conn. "Carr."
Woods Engineering Co., 108 E. Patterson St., Alliance, O.

BARS, CORED—See Metals, Bearing

BARS, HANDLE—See Bars, Motorcycle Handle

BARS, Motorcycle Handle

Standard Parts Co., Cleveland, O. (See page 1149.)

BASKETS, TOURING—See Hampers, Touring

BATTERIES, Dry

American Carbon & Battery Co., East St. Louis, Ill.
American Ever Ready Works of National Carbon Co., 303 Thompson Ave., Long Island City, N. Y. "Eveready."
Big Bear—See Western Dry Battery Co.
Bright Star Battery Co., 310 Hudson St., New York, N. Y.
Bull Dog—See Western Dry Battery Co.
Burgess Battery Co., Harris Trust Bldg., Chicago, Ill.
Burn-Boston Battery & Mfg. Works, Little Bldg., Boston, Mass.
Columbia—See National Carbon Co.
Eveready—See American Ever Ready Works
Hi-Po Waterproof Battery Corp., South Norwalk, Conn.
Hipwell Mfg. Co., 825-35 North Ave., Pittsburgh, Pa.
Hot Shot—See National Carbon Co.
Manhattan Electrical Supply Co., 17 Park Pl., New York, N. Y. "Mesco."
Maxlife—See Stolp Co.
Mesco—See Manhattan Electrical Supply Co.
National Carbon Co., Cleveland, O. "Columbia," "Hot Shot." (See page 169.)
Nue—See Union Battery Co.
Power—See Union Battery Co.
Red Shield—See Wesco Supply Co.
Sparko—See Andrae & Sons Co.

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AJAX BATTERY

— *for* —

Automobile Starting, Lighting and Ignition Service

AJAX Batteries are specially constructed to deliver better Automobile Battery Service at reasonable prices.

Long individual experience in all branches of the battery field enables us to produce types that will withstand reasonable abuse with long life and uniformly high capacity.

AJAX Batteries are made for all models of electrically-equipped cars.

Write for our Complete Replacement Book.

United States Battery Company
Passaic New Jersey

THREAD-RUBBER INSULATION
Willard STORAGE BATTERY

This trade-mark is branded in red on one side of the Still Better Willard — the only storage battery with Threaded Rubber Insulation.

Willard Storage Battery Co.
Cleveland, Ohio

THE HARTFORD BATTERY MFG. CO.
Trade Mark

¶ A battery with larger plate capacity, insuring more battery energy and "pep"

¶ A battery listed below other standard makes.

¶ A battery with efficient and inexpensive assembling features.

¶ A *Quality* battery thruout.

Some exclusive territory still open.

THE HARTFORD BATTERY MFG. CO.
Milldale, Conn.

MANUFACTURERS - DEALERS AND DISTRIBUTORS IN THE AUTOMOTIVE GROUP

BUY

BUCKRAM
BURLAP
MAILING BAGS
COVERS (Cotton, Canvas and Tarpaulins for Autos, Tractors, Trucks)
SPRING SEAT PADS
COTTON DUCK
SHEETINGS (Sized-Cotton and Factory)
SATURATED FELT
SHIPPING STRAPS
GUM TAPE
WATER-PROOF MATERIALS

FROM

The CLEVELAND-AKRON BAG Co.
PAPER-COTTON AND JUTE BAGS OF ALL KINDS
BURLAP IMPORTERS PAPER MAKERS
CLEVELAND

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BATTERIES, Dry (Continued)

Stolp Co., 2210 S. Park Ave., Chicago, Ill. "Maxlife."

Union Battery Co., Belleville, N. J. "Nue," "Power."

Washington Automobile Supply Co., Washington, Ill.

Wesco Supply Co., Seventh St. & Clark Ave., St. Louis, Mo. "Red Shield."

Western Dry Battery Co., 2501 15th Ave., W., Seattle, Wash. "Bull Dog," "Big Bear."

BATTERIES, Storage

Accessory Supply Co., 12th & Tracy Sts., Kansas City, Mo. "Asco."

Acme Storage Battery Corp., Poughkeepsie, N. Y. (See page 133.)

Ajax—See United States Battery Co.

Ajax-Accumulator Co., 414 Rush St., Chicago, Ill.

Am-Plus Storage Battery Co., 741-45 W. Van Buren St., Chicago, Ill.

American Battery Co., 1711 Grand Ave., Kansas City, Mo. "Strongheart."

American Ever Ready Works of National Carbon Co., 303 Thompson Ave., Long Island City, N. Y. "Eveready."

American Storage Battery Co., Cambridge, Mass. "Harvard."

Arthur Storage Battery Supply Co., 2540-42 Cottage Grove Ave., Chicago, Ill. (See page 163.)

Asco—See Accessory Supply Co.

Ashbrook Electric Co., 4111 Ravenswood Ave., Chicago, Ill.

Atlas Electric Storage Battery Co., Grove St., Greenville, Mich.

Aurora—See Marvin Battery & Engineering Corp.

Barco Battery Co., 253 Fort St., W., Detroit, Mich. "Bear Cat," "Biltwell."

Battery Service Corp., Philadelphia, Pa. "Kelco."

Bear Cat—See Barco Battery Co.

Big Four Battery Co., Calumet & Gostlin St., Hammond, Ind.

Biltwell—See Barco Battery Co.

Buffalo Battery Co., 6-10 Northampton St., Buffalo, N. Y.

C. I. S. C. O.—See Chicago Ignition Supply Co.

C & D—See Carlile & Doughty.

Calumet Storage Battery Co., 10113 Indianapolis Ave., Chicago, Ill.

Campbell Electric Co., 1529 Wyandotte St., Kansas City, Mo.

Carlile & Doughty, 2534 N. Broad St., Philadelphia, Pa. "C & D."

Chain Battery System, 2332 S. Michigan Ave., Chicago, Ill.

Chicago Ignition Supply Co., 308 N. Michigan Ave., Chicago, Ill. "C. I. S. C. O." (See page 1155.)

Cincinnati Storage Battery Co., Moorma Ave., Cincinnati, O.

Cole Storage Battery Co., 2433-39 Indiana Ave., Chicago, Ill. (See page 165.)

Columbia—See National Carbon Co.

Columbia Storage Battery Co., 313 Ohio St., Terre Haute, Ind.

Combat—See Commercial Battery Co.

Commercial Battery Co., 759-61 Boston Ave., Chicago, Ill. "Combat."

Cook Railway Signal Co., 1793 S. Broadway, Denver, Colo. "Re Vivo."

Cooper Storage Battery Mfg. Co., Eighth & Union Sts., Cincinnati, O.

Cowie Electric Co., E. S., 1816 McGee St., Kansas City, Mo.

Crown Battery Co., 53 Montcalm St., W., Detroit, Mich.

D-G Storage Battery Co., 2029-37 Indiana Ave., Chicago, Ill.

Davis-Lynn Storage Battery Mfg. Co., 486 Chestnut St., Lynn, Mass.

Detroit—See Disco Electric Mfg. Co.

Disco Electric Mfg. Co., 2100 Howard St., Detroit, Mich. "Detroit."

Dixie Storage Battery Co., Baltimore, Md. (See page 645.)

Dragon—See Englert Mfg. Co.

Duplex Storage Battery Co., Beaver Dam, Wis. (See page 143.)

Edison Storage Battery Co., 181 Lakeside Ave. (W. Orange), Orange, N. J.

Electric Storage Battery Co., Allegheny Ave & 19th St., Philadelphia, Pa. "Exide."

Electrolyte Storage Battery Co., 1309 Race St., Philadelphia, Pa.

Englert Mfg. Co., Pittsburgh, Pa. "Dragon."

Eureka Battery Corp., Addison & Herndon Sts., Chicago, Ill.

Eveready—See American Ever Ready Works.

Exide—See Electric Storage Battery Co.

Federal Battery Mfg. Corp., 620-24 F St., N. W., Washington, D. C. (See page 103.)

Fort Wayne Battery Mfg. Co., Fort Wayne, Ind. "Samson."

Fritchle Electric Co., 1544 Clarkson St., Denver, Colo.

General Lead Batteries Co., 4 Lister Ave., Newark, N. J. "Titan."

General Storage Battery Co., 2005 Locust St., St. Louis, Mo.

Gillette Storage Battery Co., 2115-19 Wabash Ave., Chicago, Ill. (See page 171.)

Globe Electric Co., 368 Broadway, Milwaukee, Wis.

Gould Storage Battery Co., 30 E. 42d St., New York, N. Y.

Grosche, F. W., 219 W. Mulberry St., Baltimore, Md. "Patapsco."

Guaranteed Battery Co., 2017-25 Lucas Ave., St. Louis, Mo. "Lion." (See page 279.)

Hartford Battery Mfg. Co., Milldale, Conn. (See page 101.)

Harvard—See American Storage Battery Co.

Heissler Storage Battery Co., 2506-10 Cottage Grove Ave., Chicago, Ill.

Hinz Storage Battery Co., 1212-14 Third Ave., S., Minneapolis, Minn.

Hobbs Storage Battery Co., 1281-85 S. Olive St., Los Angeles, Cal.

Hudson-Fulton—See Storage Battery Supply Co.

Ionite Storage Battery Co., 456 Park Ave., Worcester, Mass.

Jupiter—See Perfection Storage Battery Co.

Keeler Battery Co., 184 Ontario St., Toledo, O.

Kelco—See Battery Service Corp.

LBA—See Willard Storage Battery Co.

Lion—See Guaranteed Battery Co.

Luthy Storage Battery Co., 1170 Broadway, New York, N. Y.

Lyons & Co., A. H., Stephen Girard Bldg., Philadelphia, Pa. (See page 261.)

M. & M.—See Molter Service Co.

McCauley Storage Battery Co., 1060 St. Clair Ave., E., Cleveland, O.

McLean Storage Battery Co., 721 Frankfort St., Cleveland, O.

Mac-Lar Battery Co., 1050 Third St., Detroit, Mich.

Mack Storage Battery Co., 419 E. Jefferson Ave., Detroit, Mich.

Manhattan Electrical Supply Co., 17 Park Place, New York, N. Y. "Mesco."

Marko & Co., Paul M., 1402 Atlantic Ave., Brooklyn, N. Y.

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In the Federal Battery

are combined the most valuable time-tried and tested principles, and the most modern improvements that engineering and inventive skill of the highest order have been able to create.

Life, power, endurance, dependability, are all FEDERAL characteristics, but more important still is the FEDERAL'S wonderful capacity—its uncanny ability to give, at least, 25% higher discharge than any other battery of the same size. This is due to a patented process which increases by 40% the surface area of the plates—an exclusive FEDERAL feature.

The FEDERAL policy is based upon SERVICE and SATISFACTION—to the customer. This company, therefore, stands squarely behind the 18 months' guarantee in writing furnished with each battery sold. It builds only a quality product.

To reliable distributors and service stations who believe in, and practice, the FEDERAL policy, we have a highly profitable proposition to offer. Our franchise will prove your most valuable asset. Write today—if your territory is still open.

FEDERAL BATTERY MFG. CORPORATION

Executive Offices:

620-24 F STREET, N. W.
WASHINGTON, D. C.

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BATTERIES, Storage (Continued)

Marvin Battery & Engineering Corp., 67 S. La Salle St., Aurora, Ill. "Aurora."
Masco—See Milwaukee Auto Specialty Co.
Master—See Standard Storage Battery Co.
Mesco—See Manhattan Electrical Supply Co.
Milwaukee Auto Specialty Co., 705-15 Chestnut St., Milwaukee, Wis. "Radium," "Masco."
Minnesota Storage Battery Co., 208-10 Fourth St. N., Minneapolis, Minn. (See page 173.)
Molter Service Co., 306 S. Wabash Ave., Chicago, Ill. "M. & M."
Muller, Albert, Hoffman Blvd. & Hillside Ave., Jamaica, N. Y. "Porox."
Multiple Storage Battery Co., Van Wyck Ave. & L. I. R. R., Jamaica, N. Y.
National Carbon Co., Cleveland, O. "Columbia." (See page 169.)
National Lead Battery Co., 1704 Roblyn Ave., Minneapolis, Minn.
O. K. Giant Battery Corp., Gary, Ind. (See page 649.)
Paragon Battery Service Co., 64-66 W. High St., Detroit, Mich. (See page 245.)
Patapsco—See Grosche, F. W.
Perfection Storage Battery Co., 500 E. 40th St., Chicago, Ill. "Jupiter."
Permalife Storage Battery Co., Merchants Band Bldg., Indianapolis, Ind.
Philadelphia Storage Battery Co., Ontario & C Sts., Philadelphia, Pa. (See page 877.)
Pioneer Storage Battery Co., 1415 Race St., Philadelphia, Pa.
Pleis Storage Battery, 1708 Spring Garden St., Philadelphia, Pa.
Porox—See Muller, Albert.
Premier Electric Co., 3800-10 Ravenswood Ave., Chicago, Ill.
Prest-O-Lite Co., 30 E. 42d St., New York, N. Y. (See page 1221.)
R. T. Sales Co., 226 N. Adams St., Green Bay, Wis.
Radio Storage Battery Co., 1507 Franklin St., San Francisco, Cal.
Radium—See Milwaukee Auto Specialty Co.
Radium—See Rumsey Electric Co.
Ray Battery Co., 35 N. Huron St., Ypsilanti, Mich. (See page 105.)
Red Cap—See Wolke Lead Batteries Co.
Reliable—See Storage Battery Supply Co.
Reliance—See Storage Battery Supply Co.
Rumsey Electric Co., 3083 North Grand Blvd., Detroit, Mich. "Radium."
S. O. S.—See Victor Storage Battery Co.
Samson Battery Mfg. Co., Fort Wayne, Ind.
Schug Electric Mfg. Co., 959 E. Jefferson Ave., Detroit, Mich.
Silvey Electric Co., 10-16 S. Canal St., Dayton, O.
Standard Storage Battery Co., 146 Third St., Detroit, Mich. "Master."
Star Storage Battery Co., Muncie, Ind.
Storage Battery Supply Co., 239 E. 27th St., New York, N. Y. "Reliance," "Reliable," "Hudson-Fulton."
Strongheart—See American Battery Co.
Superior Storage Battery Co., Kansas City, Mo. (See page 1119.)
Titan—See General Lead Batteries Co.
U-S-L—See U S Light & Heat Corp.
U. S. Light & Heat Corp., Niagara Falls, N. Y. "U-S-L." (See page 159.)
United States Battery Co., Passaic, N. J. "Ajax." (See page 101.)
Universal Battery Co., 3404 S. La Salle St., Chicago, Ill. (See page 117.)
Utility Battery Co., 123 W. Madison St., Chicago, Ill.
Vesta Battery Corp., 2100 Indiana Ave., Chicago, Ill.
Victor Storage Battery Co., First St. & Fourth Ave., Moline, Ill. "S. O. S."
Volkcar Storage Battery Co., 2437 Michigan Ave., Chicago, Ill.
Westinghouse Union Battery Co., Swissvale, Pa.
Willard Storage Battery Co., Cleveland, O. "Lba." (See page 101.)
Witherbee Storage Battery Co., 643-45 W. 43rd St., New York, N. Y. (See page 1181.)
Wittmann Co., 205 S. 11th St., Lincoln, Neb.
Wolke Lead Batteries Co., 918 E. Main St., Louisville, Ky. "Red Cap." (See page 1247.)
Wright Storage Battery Co., 1384 Grand River Ave., Detroit, Mich.
Zoar Battery Co., Zoar, O.

BATTERY ACID—See Electrolyte, Storage Battery

BATTERY BOOSTERS—See Rectifiers, Alternating Current

BATTERY BOX LOCKS—See Locks, Cabinet and Pad; also Catches and Fasteners, Spring

BATTERY BOXES—See Boxes, Battery

BATTERY CHARGERS—See Magnetos and Dynamos; also Dynamos, Battery Charging; also Rectifiers, Alternating Current; also Rheostats, Charging; also Systems, Electric Lighting

BATTERY CHARGING CLIPS—See Clips, Electrical Test; also Connectors, Storage Battery Charging

BATTERY CHARGING CONNECTORS—See Connectors, Storage Battery Charging

BATTERY CHARGING PLUGS—See Plugs, Charging

BATTERY CONNECTOR DRILLS — See Drills and Bits, Battery Strap

BATTERY CONNECTORS—See Connectors, Dry Battery; also Connectors, Storage Battery

BATTERY CONTROLLERS—See Controllers, Storage Battery

BATTERY COVERS FOR FORDS — See Covers, Battery

BATTERY ELECTROLYTE—See Electrolyte, Storage Battery

BATTERY FILLERS—See Fillers, Automatic Storage Battery

BATTERY GAGES—See Gages, Battery

BATTERY HANDLES—See Handles, Storage Battery

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RAY

RAY

The Ray Battery Company Has Finished a Year of Achievement

THE year 1920 has been nothing short of an achievement for the Ray Battery Company.

Although Ray Batteries, containing the famous "Lavier Formula Plates" have been in active service under every condition for over four years, they were not offered to the public until the spring of 1920.

Ray Batteries were immediately acclaimed as the most advanced engineering achievement of the present day. Without great advertising or sales expense we began to close excellent distributing and service station connections within a few weeks after the first announcement was made. The battery was recognized for its merits and for the excellent selling plan which went with every battery, namely the Ray two-year **Unconditional Guarantee.**

It was a matter of a few weeks when there was indication that the original manufacturing plant in Detroit was entirely inadequate to take care of the demand. Consequently the company purchased a large factory in Ypsilanti, Michigan, situated on the New York Central, Michigan Central and interurban railway lines, which was fitted with great speed with the most modern of battery making equipment.

This fine battery plant is now in full operation and the company is into large production.

Territory for RAY Battery representation is going at surprising speed. Although the company has been accepting dealers only since late spring of 1920 it now has representation of the highest order in many sections of the country.

There is still valuable territory open. Inquiries are coming in from distributors and service stations with such rapidity that there might be a few days' delay before a representative of the company could get in touch with you.

If you want to make 1921 your banner year in sales and profits, apply for a Ray Service Station contract at once.

Types	*Prices*
6 Volt—11 Plate	$29.00
6 Volt—13 Plate	33.00
12 Volt— 7 Plate	39.00

F. O. B. Ypsilanti

RAY BATTERY COMPANY

35 North Huron Street, Ypsilanti, Michigan

Roy R. Fisher, President; Thomas Lavier, Vice-President and Chief Engineer

RAY

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BATTERY HOLDERS—See Holders, Battery; also Boxes, Battery

BATTERY IGNITION SYSTEMS—See Systems, Battery Ignition

BATTERY JARS—See Jars, Battery

BATTERY METERS—See Gages, Battery

BATTERY OPENING GENERATORS—See Steamers, Storage Battery

BATTERY PLATE PRESSES—See Presses, Storage Battery Plate

BATTERY POST CUTTERS—See Tools, Storage Battery Repair

BATTERY REPAIR PARTS — See Parts, Storage Battery Repair

BATTERY REPAIR TOOLS—See Tools, Storage Battery Repair

BATTERY SEPARATORS—See Separators, Storage Battery

BATTERY STEAMERS—See Steamers, Storage Battery

BATTERY STRAP BITS—See Drills and Bits, Battery Strap

BATTERY STRAP DRILLS—See Drills and Bits, Battery Strap

BATTERY TESTERS—See Gages, Battery

BATTERY TESTING INSTRUMENTS—See Instruments, Storage Battery Testing

BATTERY THERMOSTATS—See Thermostats, Storage Battery

BATTERY TONGS—See Tools, Storage Battery Repair

BATTERY TURNTABLES—See Turntables, Storage Battery

BATTERY VISES—See Vises, Storage Battery

BEADING MACHINES—See Machines, Crimping and Beading

BEAMS, AIRPLANE—See Parts, Wood

BEARING BRONZE—See Metals, Bearing

BEARING GRINDING COMPOUNDS—See Compounds, Bearing Grinding

BEARING JIGS—See Jigs, Main Bearing

BEARING METALS—See Metals, Bearing

BEARING PARTING TOOLS, CAM-SHAFT FOR FORDS — See Tools, Cam-Shaft Bearing Parting

BEARING PULLERS—See Pullers, Bearing

BEARING PULLING TOOLS—See Pullers, Bearing

BEARING REAMERS FOR FORDS—See Reamers, Main Bearing

BEARING SCRAPERS—See Scrapers, Bearing

BEARING SLEEVE PULLERS FOR FORDS —See Pullers, Axle Bearing Sleeve

BEARINGS, BABBITT—See Metals, Bearing

BEARINGS and BUSHINGS, Babbitt-lined, Bronze-backed

(For Die Cast Bearings—See Bearings, Die Cast; For Bearings, Plain Bronze—See Bushings, Bronze; For Bearing Metal—See Metals, Bearing)

Aluminum Manufacturers, Inc., 6205 Carnegie Ave., Cleveland, O. "Lynux."

American Bearing & Die Casting Corp., Indianapolis, Ind. (See page 299.)

Doehler Die-Casting Co., Brooklyn, N. Y. (See page 213.)

Federal Bearing & Bushing Corp., Detroit, Mich. (See page 237.)

General Aluminum & Brass Mfg. Co., Detroit, Mich. "Ring True." (See page 203.)

Gilbert & Sons Brass Foundry Co., A., St. Louis, Mo. (See page 207.)

Hoyt Metal Co., St. Louis, Mo. (See page 1179.)

Joppa Machine & Bronze Co., 1527 N. Fawn St., Philadelphia, Pa.

Lynux—See Aluminum Manufacturers, Inc.

Milwaukee Die Casting Co., 297 Fourth St., Milwaukee, Wis. (See page 299.)

Modern Die & Tool Co., Indianapolis, Ind. "Victor." (See page 111.)

Mueller Metals Co., Lapier Ave., Port Huron, Mich.

Muzzy-Lyon Co., Detroit, Mich. (See page 111.)

Parker White Metal & Machine Co., 23d St. and McKinley Ave., Erie, Pa.

Ring True—See General Aluminum & Brass Mfg. Co.

Root & Van Dervoort Engineering Co., East Moline, Ill.

Ryerson & Son, Joseph T., Chicago, Ill. (See page 111.)

Shultis Automotive Corp., 16-22 W. 61st St., New York, N. Y. (Distributors.) (See page 609.)

Specialty Products Co., 494 Mulberry St., Newark, N. J.

Stewart Mfg. Corp., 4500 Fullerton Ave., Chicago, Ill. (See page 243.)

Victor—See Modern Die & Tool Co.

BEARINGS, Ball

(For Bearing Parts—See Balls, Steel; also Cups, Ball; also Retainers, Ball)

Acorn Bearing Co., 26 Brook St., New Britain, Conn. (See page 321.)

Aetna Ball Bearing Mfg. Co., 213-31 Institute Pl., Chicago, Ill. (See page 155.)

Allopar—See Alloy Parts Mfg. Co.

Alloy Parts Mfg. Co., Canton, O. "Allopar."

American Ball Co., 115 Clifford St., Providence, R. I.

Auburn Ball Bearing Co., 27 Elizabeth St., Rochester, N. Y. (See page 239.)

B-N—See Burgess-Norton Mfg. Co.

Ball & Roller Bearing Co., 22 Maple Ave., Danbury, Conn. "Barco."

Bantam Ball Bearing Co., Bantam, Conn.

Barco—See Ball & Roller Bearing Co.

Bearings Co. of America, Lancaster, Pa. (See page 161.)

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PARTIAL LIST OF STANDARD ANNULAR BEARINGS

RADIAL BEARINGS—LIGHT 200 SERIES

No. of Bearing	List Prices	Bore		Diameter		Width	
		Mm.	Inches	Mm.	Inches	Mm.	Inches
200	$4.00	10	0.3937	30	1.1811	9	0.3543
201	4.25	12	0.4724	32	1.2598	10	0.3937
202	4.50	15	0.5906	35	1.3780	11	0.4331
203	5.60	17	0.6693	40	1.5748	12	0.4724
204	5.90	20	0.7874	47	1.8504	14	0.5512
205	7.25	25	0.9843	52	2.0473	15	0.5906
206	9.50	30	1.1811	62	2.4410	16	0.6299
207	11.00	35	1.3780	72	2.8347	17	0.6693
208	13.00	40	1.5748	80	3.1496	18	0.7087
209	14.25	45	1.7717	85	3.3465	19	0.7480
210	15.50	50	1.9685	90	3.5433	20	0.7874
211	17.50	55	2.1654	100	3.9370	21	0.8268
212	21.50	60	2.3622	110	4.3307	22	0.8661
213	27.50	65	2.5591	120	4.7244	23	0.9055
214	30.00	70	2.7559	125	4.9213	24	0.9449
215	33.00	75	2.9528	130	5.1181	25	0.9843
216	37.50	80	3.1496	140	5.5118	26	1.0236
217	43.00	85	3.3465	150	5.9055	28	1.1024
218	52.00	90	3.5433	160	6.2992	30	1.1811
219	60.00	95	3.7402	170	6.6929	32	1.2598
220	78.00	100	3.9370	180	7.0866	34	1.3386
221	90.00	105	4.1339	190	7.4804	36	1.4173
222	100.00	110	4.3307	200	7.8741	38	1.4961

RADIAL BEARINGS—MEDIUM 300 SERIES

No. of Bearing	List Prices	Bore		Diameter		Width	
		Mm.	Inches	Mm.	Inches	Mm.	Inches
300	$5.00	10	0.3937	35	1.3780	11	0.4331
301	5.25	12	0.4724	37	1.4567	12	0.4724
302	5.75	15	0.5906	42	1.6536	13	0.5118
303	6.75	17	0.6693	47	1.8504	14	0.5512
304	8.50	20	0.7874	52	2.0473	15	0.5906
305	10.00	25	0.9843	62	2.4410	17	0.6693
306	12.50	30	1.1811	72	2.8347	19	0.7480
307	14.50	35	1.3780	80	3.1496	21	0.8268
308	16.50	40	1.5748	90	3.5433	23	0.9055
309	20.00	45	1.7717	100	3.9370	25	0.9843
310	23.50	50	1.9685	110	4.3307	27	1.0630
311	28.50	55	2.1654	120	4.7244	29	1.1417
312	35.00	60	2.3622	130	5.1181	31	1.2205
313	42.50	65	2.5591	140	5.5118	33	1.2992
314	50.00	70	2.7559	150	5.9055	35	1.3780
315	62.50	75	2.9528	160	6.2992	37	1.4567
316	72.00	80	3.1496	170	6.6929	39	1.5354
317	85.50	85	3.3465	180	7.0866	41	1.6142
318	105.00	90	3.5433	190	7.4804	43	1.6929
319	120.00	95	3.7402	200	7.8741	45	1.7717
320	135.00	100	3.9370	215	8.4646	47	1.8504
321	150.00	105	4.1339	225	8.8583	49	1.9291
322	180.00	110	4.3307	240	9.4489	50	1.9685

RADIAL BEARINGS—HEAVY 400 SERIES

No. of Bearing	List Prices	Bore		Diameter		Width	
		Mm.	Inches	Mm.	Inches	Mm.	Inches
403	$11.00	17	0.6693	62	2.4410	17	0.6693
404	12.50	20	0.7874	72	2.8347	19	0.7480
405	14.50	25	0.9843	80	3.1496	21	0.8268
406	17.50	30	1.1811	90	3.5433	23	0.9055
407	21.00	35	1.3780	100	3.9370	25	0.9843
408	24.00	40	1.5748	110	4.3307	27	1.0630
409	29.50	45	1.7717	120	4.7244	29	1.1417
410	36.00	50	1.9685	130	5.1181	31	1.2205
411	43.00	55	2.1654	140	5.5118	33	1.2992
412	51.00	60	2.3622	150	5.9055	35	1.3780
413	66.00	65	2.5591	160	6.2992	37	1.4567
414	88.00	70	2.7559	180	7.0866	42	1.6536
415	105.00	75	2.9528	190	7.4804	45	1.7717
416	120.00	80	3.1496	200	7.8741	48	1.8898
417	140.00	85	3.3465	210	8.2678	52	2.0473
418	165.00	90	3.5433	225	8.8583	54	2.1260
419	215.00	95	3.7402	250	9.8426	55	2.1654
420	275.00	100	3.9370	265	10.4331	60	2.3622
421	.....	105	4.1339	290	11.4174	65	2.5591
422	.....	110	4.3307	320	12.5985	70	2.7559

Discounts quoted upon application

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PARTIAL LIST OF STANDARD THRUST BEARINGS

THRUST BEARINGS—B SERIES

Number of Bearing	List Price	Bore, Inches	Diameter, Inches	Thickness, Inches
1-B	$4.25	½	1 1/16	½
2-B	4.60	⅝	1 1/16	½
3-B	5.00	¾	1 1/16	½
4-B	5.40	⅞	1 1/16	½
5-B	5.85	1	1 1/16	½
6-B	6.25	1 1/16	1 1/16	½
7-B	6.60	1¼	2 1/16	11/16
8-B	7.00	1⅜	2 1/16	11/16
9-B	7.50	1½	2 1/16	11/16
10-B	8.25	1⅝	2 1/16	11/16
11-B	9.20	1¾	2 1/16	¾
12-B	10.00	1⅞	2 1/16	¾
13-B	10.85	2	2 1/16	¾
14-B	12.25	2¼	3 1/16	⅞
15-B	14.40	2½	3 1/16	1
16-B	16.80	2¾	4	1
17-B	18.60	3	4 1/16	1⅛
18-B	27.75	3½	5	1¼
19-B	35.00	4	5¾	1⅜

THRUST BEARINGS—1100 F SERIES

Number of Bearing	List Price	Bore		Diameter		Thickness	
		Mm.	Inches	Mm.	Inches	Mm.	Inches
1102-F	$3.30	10	.3937	30	1.18	12	.47
1103-F	3.65	15	.5906	35	1.38	14	.55
1104-F	4.25	20	.7874	40	1.57	14	.55
1105-F	4.75	25	.9843	48	1.89	15	.59
1106-F	5.25	30	1.1811	53	2.09	15	.59
1107-F	6.25	35	1.3780	62	2.44	18	.71
1108-F	7.25	40	1.5748	64	2.52	18	.71
1109-F	8.50	45	1.7717	73	2.87	20	.79
1110-F	9.50	50	1.9685	78	3.07	20	.79
1111-F	11.00	55	2.1654	88	3.46	24	.94
1112-F	12.00	60	2.3622	90	3.54	24	.94
1113-F	13.00	65	2.5591	100	3.94	27	1.06
1114-F	14.50	70	2.7559	103	4.06	27	1.06
1115-F	16.00	75	2.9528	110	4.33	27	1.06
1116-F	17.50	80	3.1496	115	4.53	31	1.22
1117-F	23.00	85	3.3465	125	4.92	34	1.34
1118-F	25.50	90	3.5433	135	5.31	36	1.42
1119-F	28.00	95	3.7402	140	5.51	38	1.50
1120-F	30.25	100	3.9370	150	5.91	38	1.50
1121-F	32.50	105	4.1339	155	6.10	40	1.57
1123-F	37.00	115	4.5276	165	6.50	43	1.69
1125-F	41.00	125	4.9213	180	7.09	46.5	1.83
1128-F	49.00	140	5.5118	200	7.87	52	2.05

SELF-ALIGNING THRUST BEARINGS—1100 AND 1100 U SERIES

Number of Bearing	List Price		Bore		Diameter		Thickness	
	Without Washer	With Washer	Mm.	Inches	Mm.	Inches	Mm.	Inches
1102	$4.00	$5.45	10	0.3937	30	1.18	14	0.55
1103	4.50	5.95	15	0.5906	35	1.38	15	0.59
1104	5.35	6.95	20	0.7874	40	1.57	16	0.63
1105	5.90	7.50	25	0.9843	48	1.89	16.5	0.65
1106	6.40	8.25	30	1.1811	53	2.09	18	0 71
1107	7.50	9.45	35	1.3780	62	2.44	21	0.83
1108	8.60	10.85	40	1.5748	64	2.52	21	0.83
1109	9.90	12.50	45	1.7717	73	2.87	25	0.98
1110	11.25	13.90	50	1.9685	78	3.07	25	0.98
1111	12.85	15.90	55	2.1654	88	3.46	28	1.10
1112	13.90	17.10	60	2.3622	90	3.54	28	1.10
1113	15.50	19.00	65	2.5591	100	3.94	32	1.26
1114	17.10	21.90	70	2.7559	103	4.06	32	1.26
1115	18.75	23.55	75	2.9528	110	4.33	32	1.26
1116	20.35	25.15	80	3.1496	115	4.53	35	1.38
1117	26.75	31.80	85	3.3465	125	4.92	38	1.50
1118	30.00	35.80	90	3.5433	135	5.31	38	1.50
1119	33.15	39.60	95	3.7402	140	5.51	41	1.61
1120	35.50	43.30	100	3.9370	150	5.91	41	1.61
1121	38.00	46.80	105	4.1339	155	6.10	46	1.81
1123	42.80	51.35	115	4.5276	165	6.50	49	1.93
1125	49.25	59.35	125	4.9213	180	7.09	53	2.09
1128	58.00	71.70	140	5.5118	200	7.87	60	2.36

Discounts quoted upon application

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The information and bearing sizes given herewith, obviously, are extremely limited. We have endeavored only to show the principal dimensions covering those radial and thrust bearings most frequently used in the automobile industry.

The following is a list of the different types of Strom Bearings manufactured:

Radial

Made in any size for light, medium, or heavy duty; with deep groove ball races accurately formed, in which large sized balls, separated by a light and sturdy retainer, roll true with the least friction. They are especially adapted above all others to sustain large radial loads under severe operating conditions. They are capable of resisting end thrust loads equal to 25% of their available radial capacity.

Angular Contact

Made in the same sizes and interchangeable with the radial bearings. They are of similar construction to the radial bearings, being especially designed to support combinations of radial and heavy end thrust loads acting in one direction. They have an end thrust capacity equal to 150% of their available radial capacity.

Thrust

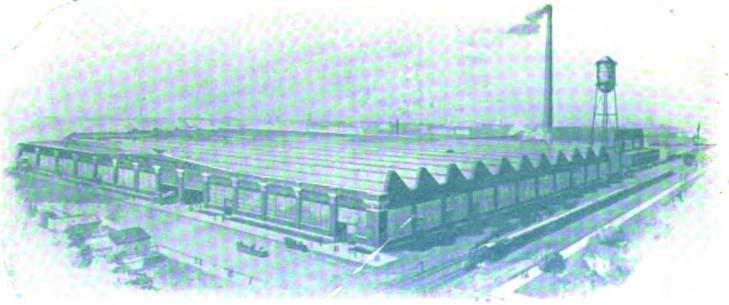
Made in all types and sizes with flat and grooved races to meet all conditions of speed and thrust loads acting in one or two directions, and compensating for misalignment. They are of the same typical sturdy construction for which STROM bearings are noted, and are especially adapted to sustain exceptionally large thrust loads.

Write for complete catalog, engineering literature, and prices. We maintain a large staff of designing engineers that are at your disposal for the solution of any ball bearing problem.

U. S. BALL BEARING MFG. CO.

(Conrad Patent Licensee)

CHICAGO ILL., U. S. A.



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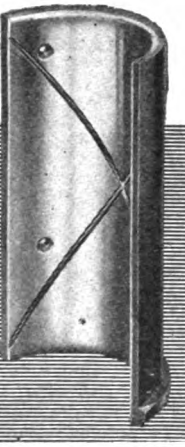
ANOTHER basic reason why leading motor manufacturers in the automotive world specify Mogul Bearings is the fact that no reclaimed metals are used in the making of Mogul Alloys. We make Mogul Alloys in our own plant—and have done so for twenty-five years. We guarantee that nothing but virgin metals are used in the making of Mogul Bronze Babbitt Lined and Die Cast Bearings.

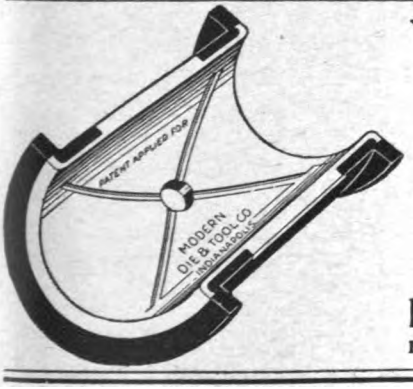
THE MUZZY-LYON CO., LTD.
DETROIT, MICHIGAN

Specify Mogul Motor Bearings



Mogul

Bearing Alloys *and* Finished Bearings



VICTOR BEARINGS

Bronze Back and Die Cast

Are regular equipment on all leading trucks—tractors—pleasure cars.

They stand for the best in bearing construction. They mean that you are getting value received—a bearing that is in absolute accordance with your blueprints and specifications.

Send us your Blueprints for an Estimate

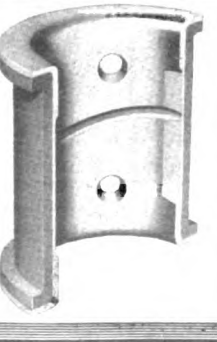
MODERN DIE AND TOOL CO., Indianapolis, Ind.

Established 1905 W. L. SANDAGE, Proprietor

Engine Bearings

We manufacture high grade machine finished, bronze backed, babbitt lined bearings to your specifications.

Send us your drawings and specifications for estimate.



JOSEPH T. RYERSON & SON

CHICAGO ST. LOUIS DETROIT BUFFALO NEW YORK

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BEARING, Ball (Continued)

Bearings Co. of Penna., 684 N. Broad St., Philadelphia, Pa. (Distributors.) (See page 387.)

Burgess-Norton Mfg. Co., Geneva, Ill. "B-N." (See page 735.)

C. & C. Sales Corp., 1755 Broadway, New York, N. Y. (Importers.) (See page 505.)

Fafnir Bearing Co., New Britain, Conn. (See page 113.)

Federal Bearings Co., 26 William St., Poughkeepsie, N. Y. "Schats."

G-A Ball Bearing Co., 123 N. Albany Ave., Chicago, Ill.

Graham Roller Bearing Co., Coudersport, Pa. (See page 283.)

Gurney Ball Bearing Co., Jamestown, N. Y. (See page 487.)

Gwilliam Co., 23 Flatbush Ave., Brooklyn, N. Y. (Dealers.) (See page 177.)

Hess-Bright—See SKF Industries, Inc.

Imperial Bearing Co., Detroit, Mich. (See page 599.)

Joy Ball Bearing Co., 407 S. Aberdeen St., Chicago, Ill.

Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y. "S. R. B."

Mathews Mfg. Co., H. A., Seymour, Conn.

Michigan Bearings Co., 1311 Woodward Ave., Detroit, Mich. (Dealers.) (See page 333.)

New Departure Mfg. Co., Bristol, Conn.

Nice Ball Bearing Co., 30th St. & Nicetown Lane, Philadelphia, Pa.

Norma Co. of America, Anable Ave., Long Island City, N. Y. (See page 78.)

Pruyn Co., 683 N. Broad St., Philadelphia, Pa.

SKF Industries, Inc., 165 Broadway, New York, N. Y. "Hess-Bright." (See page 115.)

S. R. B.—See Marlin-Rockwell Corp.

S R O—See Marburg Bros.

S-W-S Co., Minneapolis, Minn. (See page 467.)

Schats—See Federal Bearings Co.

Smith Bearing Co., L. C., 2200 Michigan Ave., Chicago, Ill. (Chicago Distributor for Nice, Fafnir and Gurney Bearings.) (See page 301.)

Standard Machinery Co., Auburn, R. I. (See page 377.)

Strom—See U. S. Ball Bearing Mfg. Co.

Tigar Bearings Co., M. George, 1876 Broadway, New York, N. Y. (Distributors.) (See page 531.)

U. S. Ball Bearing Mfg. Co., Palmer St. & Kolmer Ave., Chicago, Ill. "Strom." (See pages 107 to 110 and Front Cover.)

BEARINGS, BRONZE—See Metals, Bearing

BEARINGS, DIE CAST—See Castings, Die

BEARINGS, DIE CAST, FOR FORDS—See Bushings, Bronze and Die Cast

BEARINGS, Drive Gear Ball and Roller Thrust, for Fords

(Ball thrust bearings to be installed at left side of differential in place of thrust washers)

Allopar—See Alloy Parts Mfg. Co.

Alloy Parts Mfg. Co., Canton, O. "Allopar."

Anco—See Anderson Co.

Anderson Co., 232 S. St. Joseph St., South Bend, Ind. "Anco."

Bailey Co., Geo. D., 4500 Ravenswood Ave., Chicago, Ill.

Bersted Mfg. Co., 765 Mather St., Chicago, Ill. (See page 505.)

Esch, Ed., 2100 Michigan Ave., Chicago, Ill.

F. H. & S. Co., 624 S. Michigan Ave., Chicago, Ill. (See page 527.)

Graham Roller Bearing Co., Coudersport, Pa. (See page 283.)

Green Dragon Co., 54 W. Randolph St., Chicago, Ill.

Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributor for Graham Bearings.) (See page 1187.)

Pittsburgh Casting & Heater Co., Scott Pl., Pittsburgh, Pa.

Simmons Mfg. Co., 3405-11 Perkins Ave., Cleveland, O.

Simplex Corp., 2214 S. Michigan Ave., Chicago, Ill. (See page 869.)

BEARINGS, Drive Shaft Steady

Carter Carburetor Co., 2838-40 N. Spring Ave., St. Louis, Mo.

BEARINGS, Front Wheel, for Fords

(Special Ball and Roller Bearings for replacing Front Wheel Bearings)

Allied Steel Products Co., 7 Walnut St., Aurora, Ill. "A-S-P."

Allopar—See Alloy Parts Mfg. Co.

Alloy Parts Mfg. Co., Canton, O. "Allo-par."

A-S-P—See Allied Steel Products Co.

B-N Longlife—See Burgess-Norton Mfg. Co.

Burgess-Norton Mfg. Co., Geneva, Ill. "B-N Longlife." (See page 735.)

Burnell Engineering Co., 536 E. Water St., Milwaukee, Wis.

Casey-Hudson Co., 341 E. Ohio St., Chicago, Ill.

Coppins, Scott R., 329 S. Main St., Princeton, Ill. "Long Life."

Long Life—See Coppins, Scott R.

Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y. "Standard."

Pruyn Co., 683 N. Broad St., Philadelphia, Pa.

Roll-Rite Mfg. Co., 4 Broad St., Charleston, S. C.

Se-Co—See Stacks Engineering Co.

Shafer Bearing Corp., 4500 Ravenswood Ave., Chicago, Ill. (See page 1237.)

Simplex Corp., 2214 S. Michigan Ave., Chicago, Ill. (See page 869.)

Stacks Engineering Co., 216 W. Ontario St., Chicago, Ill. "Se-Co."

Standard—See Marlin-Rockwell Corp.

BEARINGS, Motor Boat Stern

Eisenbrandt, F. B., Light St., Baltimore, Md.

Michigan Wheel Co., 1140-48 Monroe Ave., N. W., Grand Rapids, Mich.

Monarch Valve Co., 112 Front St., Brooklyn, N. Y.

BEARINGS, Oilless

(Impregnated Wood or Graphite Bronze Bearings or Bushings)

Arguto Oilless Bearing Co., 157 W. Berkeley St., Philadelphia, Pa.

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FAFNIR

BALL BEARINGS

FAFNIR Radial Ball Bearings are interchangeable with all others of standard make. We endeavor to serve our customers by making prompt deliveries. Dealers and garage men will find it convenient to obtain them from our distributors, who constantly maintain a complete stock.

DISTRIBUTORS

Albany, N. Y.	61 Central Ave.	Autoelectric Equipment and Repair Co.
Atlanta, Ga.	323 Peachtree St.	Ahlberg Bearing Company
Baltimore, Md.	1419 North Charles St.	The Motor Parts Corporation
Billings, Montana		Accessory Sales Company
Birmingham, Ala.	407 South 21st St.	Burns Bros.
Boston, Mass.	93 Mass. Ave.	Ahlberg Bearing Company
Calgary, Alberta		The Chapin Company
Chicago, Ill.	2208 Michigan Ave.	L. C. Smith Bearings Co.
Chicago, Ill.	317 East 29th St.	Ahlberg Bearing Company
Cincinnati, Ohio	804 Race St.	Ahlberg Bearing Company
Cincinnati, Ohio	8th and Main St.	I. J. Cooper Rubber Company
Cleveland, Ohio	1843 Euclid Ave.	Cleveland Ignition Company
Cleveland, Ohio	4217 Euclid Ave.	Ahlberg Bearing Company
Cleveland, Ohio	11th and Chester Aves.	I. J. Cooper Rubber Company
Columbia, S. C.	1220 Hampton Ave.	E. A. Jenkins
Columbus, Ohio	142 East Gay St.	I. J. Cooper Rubber Company
Dallas, Texas	Commerce and Harwood Sts.	Southern Equipment Company
Dallas, Texas	103 S. Houston St.	Standard Spring & Axle Company
Dayton, Ohio	12-20 North Jefferson St.	I. J. Cooper Rubber Company
Denver, Colo.	1725 California St.	M. L. Foss
Des Moines, Iowa	506 West 7th St.	Bernhard & Turner Automobile Co.
Detroit, Mich.	91-109 Selden Ave.	Auto Electric & Service Corporation
Detroit, Mich.	790 Woodward Ave.	Ahlberg Bearing Company
Detroit, Mich.	378 Grand River Ave.	The Detroit Ball Bearing Company
El Paso, Texas	315 East Missouri St.	Western Battery & Magneto Company
Hagerstown, Md.	52½ E. Antietam St.	Auto Service Products Co.
Hartford, Conn.	54 Allyn St.	Connecticut Bearing Co.
Indianapolis, Ind.	Capital and Vermont St.	I. J. Cooper Rubber Company
Kansas City, Mo.	207 East 18th St.	Ahlberg Bearing Company
Knoxville, Tenn.	407 West Clinch Ave.	I. J. Cooper Rubber Company
Little Rock, Ark.	3rd and Cumberland St.	Crow-Burlingame Company
Los Angeles, Cal.	415 West Pico St.	The Pacific Ball Bearing Company
Macon, Ga.	Second and Poplar Sts.	A. S. Hatcher Co., Successor to S. S. Parmelee Company
Memphis, Tenn.	239 Madison Ave.	Ahlberg Bearing Company
Memphis, Tenn.	23 S. Second St.	I. J. Cooper Rubber Company
Milwaukee, Wis.	457 Milwaukee St.	Ahlberg Bearing Company
Minneapolis, Minn.	8 South Ninth St.	Feenstermacher Automobile Supply Co.
Modesto, Cal.	1211 J Street	United Automotive Service, Inc.
Nashville, Tenn.	1224 Broadway Ave.	I. J. Cooper Rubber Company
New Haven, Conn.	294 York St.	Connecticut Bearing Company
New Orleans, La.	726 Girod St.	Ahlberg Bearing Company
New York, N. Y.	Rm. 116, No. 5 Columbus Circle	The Fafnir Bearing Co., N. Y. Office
Oklahoma City, Okla.	406 North Broadway	Sharp Auto Supply Company
Omaha, Neb.	1726 St. Mary's Ave.	Ahlberg Bearing Company
Philadelphia, Pa.	634 North Broad St.	The Bearings Co. of Pennsylvania
Pittsburgh, Pa.	401 Highland Bldg.	Ahlberg Bearing Company
Portland, Oregon	North 8th and Davis Sts.	Sunset Electric Company
Providence, R. I.	511 Westminster St.	Ahlberg Bearing Company
Rawlins, Wyo.		Rawlins Motor Company
Richmond, Va.	1838 West Broad St.	W. M. Reynolds
Sacramento, Cal.	916 12th St.	Henderson Bros.
Salt Lake City, Utah	115-117 South West Temple	Motor Mercantile Company
San Antonio, Texas	204 Avenue O.	Southern Equipment Company
San Francisco, Cal.	53-57 California St.	The F. Somers Peterson Company
Seattle, Wash.	1507-11 Broadway	Sunset Electric Company
Sheboygan, Wis.	606-608 No. 8th St.	Acker Electrical Company
Spokane, Wash.	Cor. Second and Cedar Sts.	Empire Electric Service Company
St. Louis, Mo.	2831 Locust St.	Ahlberg Bearing Company
Stockton, Cal.	136 East Miner Ave.	Guarantee Ignition & Supply Company
Syracuse, N. Y.	143-145 Seymour St.	Burr-Fowler Company
Toledo, Ohio	607 Michigan St.	I. J. Cooper Rubber Company
Toronto, Canada	183 Church St.	Canada Sales Company
Vancouver, B. C.	620 Howe St.	Bearings Supply House, Ltd.
Washington, D. C.	1919 14th St.	Bearing Sales Co.
Washington, D. C.	1335 14th St., N. W.	F. E. Phelps

THE FAFNIR BEARING COMPANY

Conrad Patent Licensee

Main Offices and Factory—New Britain, Conn.

BRANCH OFFICES

New York, N. Y., 5 Columbus Circle
Chicago, 1301 Michigan Ave
Cleveland, 916-917 Swetland Bldg.
Detroit, 752 David Whitney Bldg.

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BEARINGS, Oilless (Continued)

Bound Brook Oil-less Bearing Co., Bound Brook, N. J. "Nigrum." (See page 611.)

Cleveland Graphite-Bronze Co., Cleveland, O. (See page 179.)

Dunham Co., Thos., Aurora, Ill. (See page 167.)

Massachusetts Oilless Bearings Co., 518 Main St., Worcester, Mass.

Mechanical Devices Co., 32 S. La Salle St., Aurora, Ill.

Metaline Co., 43 Third St., Long Island City, N. Y.

Nigrum—See Bound Brook Oil-less Bearing Co.

Nolu Oilless Bearing Co., 6 E. Johnson St., Philadelphia, Pa.

O. & S. Bearing Co., 315 S. Artillery Ave., Detroit, Mich.

Randall Graphite Sales Co., 711-21 Fulton St., Chicago, Ill.

BEARINGS, PROPELLER SHAFT STEADY —See Bearings, Drive Shaft Steady

BEARINGS, REAR AXLE THRUST, FOR FORDS—See Bearings, Drive Gear Ball Thrust

BEARINGS, Reground Ball

Ahlberg Bearing Co., 317-27 E. 29th St., Chicago, Ill.

Bearings Co. of Penna., 684 N. Broad St., Philadelphia, Pa. (See page 387.)

Kelly Ball Bearing Co., 651 Turk St., San Francisco, Cal.

New York Bearings Co., 311 W. 59th St., New York, N. Y.

Pacific Ball Bearing Co., 415 W. Pico St., Los Angeles, Cal.

Pruyn Co., 683 N. Broad St., Philadelphia, Pa.

Sherwood, A. S., 253 W. 54th St., New York, N. Y.

Smith Bearing Co., L. C., 2200 Michigan Ave., Chicago, Ill. (Western Distributors for Bearings Co. of Penna., Philadelphia. Pa.) (See page 301.)

BEARINGS, Roller

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern & Southern Distributors for "Gilliam" Bearings.) (See page 275.)

Ahlberg Bearing Co., 317-27 E. 29th St., Chicago, Ill. "Trojan."

American Roller Bearing Co., 416 Melwood Ave., Pittsburgh, Pa.

Ball & Roller Bearing Co., 22 Maple Ave., Danbury, Conn. "Barco."

Barco—See Ball & Roller Bearing Co.

Bearings Co. of Penna., 684 N. Broad St., Philadelphia, Pa. (Distributors.) (See page 387.)

Bock—See Standard Parts Co.

Bower Roller Bearing Co., Detroit, Mich. (See page 135.)

C. & C. Sales Corp., 1755 Broadway, New York, N. Y. (Distributors.) (See page 505.)

Commerce Steel Products Co., Otis Bldg., Chicago, Ill. "F & H."

Dohner—See Ohio Metal Products Co.

F. W. S.—See Stewart Mfg. Corp.

Gilliam—See Spencer Metal Products Co.

Gilliam Mfg. Co., Savannah Ave. & Eighth St., N. E., Canton, O.

Graham Roller Bearing Co., Coudersport, Pa. (See page 283.)

Gwilliam Co., 23 Flatbush Ave., Brooklyn, N. Y. (Dealers.) (See page 177.)

Hart Roller Bearing Co., 25 Main St., Orange, N. J.

Hyatt Roller Bearing Co., Detroit, Mich. (See page 159.)

Makutchan Roller Bearing Co., Cass & Bissell Sts., Joliet, Ill. "Twinro."

Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y. "S. R. B."

Michigan Bearings Co., 1311 Woodward Ave., Detroit, Mich. (Dealers.) (See page 333.)

National Bearings Service Co., Girard Ave. & Broad St., Philadelphia, Pa. "Wright."

Norma Co. of America, Anable Ave., Long Island City, N. Y. (See page 78.)

Ohio Metal Products Co., Free Press Bldg., Detroit, Mich. "Dohner."

Regina Co., Cherry St., Rahway, N. J.

S. M. Novelty Mfg. Co., 53d St. & Broomall Ave., Philadelphia, Pa.

S. R. B.—See Marlin-Rockwell Corp.

Shafer Bearing Corp., 4500 Ravenswood Ave., Chicago, Ill. (See page 1237.)

Spencer Metal Products Co., Spencer, O. "Gilliam." (See page 766.)

Standard Machinery Co., Auburn, R. I. (See page 377.)

Standard Parts Co., Cleveland, O. "Bock." (See page 1149.)

Stewart Mfg. Corp., F. W., 345 W. Austin Ave., Chicago, Ill. "F. W. S."

Timken Roller Bearing Co., Canton, O. (See page 1169.)

Trojan—See Ahlberg Bearing Co.

Twinro—See Makutchan Roller Bearing Co.

Whitney Bearing Corp., 536 Lake Shore Drive, Chicago, Ill. (See page 1201.)

Wright Roller Bearing Co., 20th St. & Indiana Ave., Philadelphia, Pa.

Wright—See National Bearings Service Co.

BEARINGS, STERN—See Bearings, Motor Boat Stern

BEARINGS, THRUST—See Bearings, Ball; also Bearings, Roller

BEDS or BERTHS, Car and Camp

Special Beds or Berths for use either in the car or under tent when touring)

Anton & Ackerman Co., 132-34 Kansas Ave., Topeka, Kans.

Any-Kar—See Peoria Auto-Kot Co.

Auto Bed Camp Mfg. Co., 2207 Pennsylvania St., Kansas City, Mo.

Autobed—See Tentobed Co.

Auto-Kamp Equipment Co., 2008 Sheridan Ave., Saginaw, Mich.

Baker-Lockwood Mfg. Co., 618 Delaware St., Kansas City, Mo.

Basford, H. B., 431 Sutter St., San Francisco, Cal.

Burch Mfg. Co., F. J., First St. & Santa Fe Ave., Pueblo, Colo.

Colburn Mfg. Co., 1110 Ide Ave., Spokane, Wash.

Curtis Trailer Co., 413 W. Broadway, Minneapolis, Minn.

Demoin—See Des Moines Tent & Awning Co.

Des Moines Tent & Awning Co., 913-15 Walnut St., Des Moines, Ia. "Demoin."

Enterprise Bed Co., Hammond, Ind.

Genesee Mfg. Co., 516-18 Harrison St., Flint, Mich.

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Research Laboratory established at Philadelphia to co-operate with the Gothenburg Laboratories in the study of the American Manufacturers friction problems.

THE technical advice brought you by our engineers embodies the experience of highly trained organizations in all parts of the world in the solving of friction problems.

This international experience is both technical and practical and is acquired in co-effort with the best international research endeavor.

SKF service in America is linked to this international experience. Its tangible evidence is found in products marked "**SKF**" and in the advice supplied you by our engineers.

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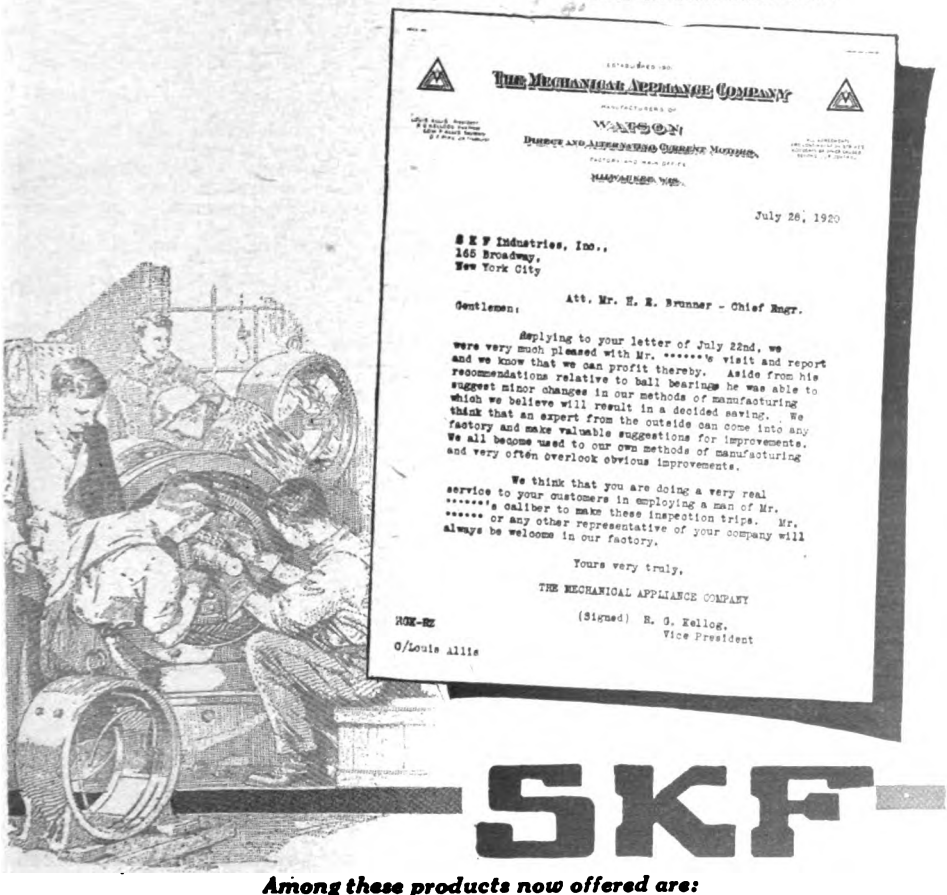
165 Broadway, New York City

Supervising at the request of the stockholders.

- The Hess-Bright Manufacturing Co.
- SKF Ball Bearing Co.
- Atlas Ball Co.
- Hubbard Machine Co.
- SKF Research Laboratories



THE MECHANICAL APPLIANCE COMPANY

MANUFACTURERS OF

WATSON

DIRECT AND ALTERNATING CURRENT MOTORS

FACTORY AND MAIN OFFICE

MILWAUKEE, WIS.

July 28, 1920

S K F Industries, Inc.,
165 Broadway,
New York City

Att. Mr. H. E. Brunner - Chief Engr.

Gentlemen:

Replying to your letter of July 22nd, we were very much pleased with Mr. ******'s visit and report and we know that we can profit thereby. Aside from his recommendations relative to ball bearings he was able to suggest minor changes in our methods of manufacturing which we believe will result in a decided saving. We think that an expert from the outside can come into any factory and make valuable suggestions for improvements. We all become used to our own methods of manufacturing and very often overlook obvious improvements.

We think that you are doing a very real service to your customers in employing a man of Mr. ******'s caliber to make these inspection trips. Mr. ****** or any other representative of your company will always be welcome in our factory.

Yours very truly,

THE MECHANICAL APPLIANCE COMPANY

(Signed) R. G. Kellog,
Vice President

RGK-RE

C/Louis Allis

SKF

Among these products now offered are:

Single row deep groove ball bearings. Thrust bearings. Steel balls.
Double row self aligning ball bearings. Transmission equipment.

618

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BEDS or BERTHS, Car and Camp (Continued)

Handy Camp—See Tourist Auto Equipment Co.
McMillin—See Mackenzie-Waterhouse Co.
Mackenzie-Waterhouse Co., 828 Transportation Bldg., Chicago, Ill. "McMillan." (See page 1101.)
Miller Auto Bed Co., 1102 E. 12th St., Oakland, Cal.
Musso, F. G., 194 W. Santa Clara St., San Jose, Cal.
Peoria Auto-Kot Co., 115 N. Madison St., Peoria, Ill. "Any-Kar."
Perfection—See Pneumatic Mfg. Co.
Pneumatic Mfg. Co., 124-28 Atlantic Ave., Brooklyn, N. Y. "Perfection."
Red Seal—See Schaefer Tent & Awning Co.
Schaefer Tent & Awning Co., Denver, Colo. "Red Seal." (See page 117.)
Schilling Co., L. F., Salem, O.
Stoll Mfg. Co., 3250 Larimer St., Denver, Colo.
Tentobed Co., 3300 W. Jackson Blvd., Chicago, Ill. "Autobed."
Tourist Auto Equipment Co., Dahlgren, Ill. "Handy Camp."
Wolfe & Co., 417 Pontius Ave., Seattle, Wash.

BEDS or BERTHS, Car and Camp, for Fords

(Special beds or berths for use either in the car or under tent when touring)

Booth & Co., Sheldon, 1505 E. 53d St., Chicago, Ill.
McMillin—See Mackenzie-Waterhouse Co.
Mackenzie-Waterhouse Co., 828 Transportation Bldg., Chicago, Ill. "McMillan." (See page 1101.)
Schilling Co., L. F., Salem, O.
Wolfe & Co., 413 Pontius Ave., Seattle, Wash.

BELL RINGERS—See Pushes, Foot

BELLS, Electric

(For use as a warning signal in place of horn)

Bunyan Mfg. Co.—See Loewus, Edwin H.
Cathedral Bell Mfg. Co., Cathedral & Chase Sts., Baltimore, Md.
Delta-Star Electric Co., 617-31 W. Jackson Blvd., Chicago, Ill.
Electric Sentry Co., 118 S. Sixth St., Philadelphia, Pa.
Liberty—See Bunyan Mfg. Co.
Loewus, Edwin H., 304 W. 54th St., New York, N. Y. (Sole Distributor for Bunyan Mfg. Co., Cleveland, O. "Liberty.") (See page 1185.)
Liberty—See Loewus, Edwin H.
Rousseau, David, Ossining, N. Y.

BELLS, Electric, for Fords

(For use as a warning signal in place of horn)

Bunyan Mfg. Co.—See Loewus, Edwin H.
Liberty—See Loewus, Edwin H.
Loewus, Edwin H., 304 W. 54th St., New York, N. Y. (Sole Distributor for Bunyan Mfg. Co., Cleveland, O. "Liberty.") (See page 1185.)

BELLS or GONGS, Mechanical

(For use as a warning signal in place of horn)

Bevin Bros. Mfg. Co., East Hampton, Conn.
East Hampton Bell Co., Walnut Ave., East Hampton, Conn.
Mossberg Co., Frank, Attleboro, Mass.
Reiter, G. C., Canton, O.

BELT ADJUSTERS FOR FORDS—See Adjusters, Fan Belt

BELT CONNECTORS—See Fasteners, Belt

BELT COUPLINGS—See Fasteners, Belt

BELT DRESSING—See Dressing, Clutch

BELT FASTENERS—See Fasteners, Belt

BELT GUIDES FOR FORDS—See Guides, Fan Belt

BELT LACING—See Fasteners, Belt

BELTING, Leather

(Flat and Round Belting for Fan Belts; for Endless Fabric Belts—See Belts, Endless Fabric; for V-Belts—See Belts, V; for Spiral Wire Belts—See Belts, Spiral Wire)

Adheso—See Hide, Leather & Belting Co.
Almco—See Auto Leather Mfg. Co.
Apex—See Palmer & Co.
Auto Leather Mfg. Co., Arlington, N. J. "Kaenjay," "Almco." (See page 133.)
Bailey-Fitwell Co., 1318 S. Grand Ave., Los Angeles, Cal. "Fitwell."
Bantlin Co., Julius J., Cincinnati, O. (See page 505.)
Bonner & Barnewell, 30 Church St., New York, N. Y.
Boston Leather Specialties, 30 Merrimac St., Boston, Mass.
Bradford Belting Co., 201 Walnut St., Cincinnati, O. "Monarch."
Bull's Head—See Schieren Co.
Calsco—See Chicago Auto Leather Specialty Co.
Casco—See Schieren Co.
Charter Oak—See Palmer & Co.
Chibeco—See Chicago Belting Co.
Chicago Auto Leather Specialty Co., 6637 S. Halsted St., Chicago, Ill. "Calsco."
Chicago Belting Co., 113-25 N. Green St., Chicago, Ill. "Chibeco."
Cino—See Mooney Belting Co.
Climax—See Hudson Belting Co.
Cocheco—See Williams & Sons.
Coe & Brown, 204 George St., New Haven, Conn.
Comber—See Rahmann & Co.
Detroit Clutch Cover Co., 17 Woodward Ave., Detroit, Mich.
Detroit Leather Works, 863 E. Lafayette Blvd., Detroit, Mich. (See page 125.)
Dixie—See Schieren Co.
Doerner & Co., 4127 32d St., Cincinnati, O. "Paragon."
Duxbak—See Schieren Co.
Eagle—See Schieren Co.
Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Factory Distributors for Page Belting Co., Concord, N. H.)
Endurmo—See Missouri Belting Co.

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Adjustable Boring Cutters and Bars

The Madison Adjustable Boring Cutters and Bars replace reamers on automatic machines, turret lathes, boring mills, etc. They can be sharpened and set to within .00025 inch in less than five minutes.

These cutters do the work more accurately than reamers, insuring absolutely straight holes of any size you may require.

Made in 45 sizes—from 1¼ to 5 inches in diameter. Larger sizes on application.

The Madison Adjustable Boring Cutters and Bars pay for themselves very quickly out of the money they save in the tool room. Write us to-day for details.

MADISON MANUFACTURING CO.

Corner Spring and Elton Sts. **MUSKEGON, MICH.**

Most Satisfactory Batteries

Universal Starting and Lighting Batteries are, and have been for years, the most satisfactory batteries under every condition.

There is a Universal Battery for every car and a repair part for any make or size battery. This fact gives the Universal Dealer the cream of the trade.

Dealers should write at once for territory and sales proposition. Also for our new catalogs and reference book pertaining to batteries for all cars and parts for all batteries.

Universal Battery Company

3404 S. La Salle St. - CHICAGO, ILL.

UNIVERSAL Batteries

Henry C. Hunt Company

Manufacturers of

Leather Fan Belting
Leather "V" Belting
Detachable Fan Belts
Endless Fan Belts
Knuckle and Joint Boots
Leather Lacing
Leather Clutch Facings
Leather Straps
Leather Washers
Clutch and Belt Dressing

261 Franklin St., Boston, Mass.

The Best Auto Bed Made!

Naturally, then, the Best Seller, which for Dealers means More PROFITS. The Popularity of the

"Red Seal" Auto-Porch Bed and Tent

is due to their many points of Superiority: The Bed Cannot Sag; It is Light, Compact and Durable. Can be set up with or without car, or over the seats WITHIN any 5-passenger Auto in two minutes. Demanded by tourists and campers everywhere because of its convenience and comparatively low price.

Live Wire Dealers! Send for descriptive literature, illustrating superior features of this bed and tent. Generous discount to reliable dealers.

The Schaefer Tent & Awning Co., Denver, Colorado

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BELTING, Leather (Continued)

Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for "G. & K." Belts.) (See page 125.)

Fitwell—See Bailey-Fitwell Co.

G. & K.—See Graton & Knight Mfg. Co.

Graton & Knight Mfg. Co., Worcester, Mass. "G. & K." (See page 119.)

Hide Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind. "Adheso." "Wetprufe," "Kork-O-Grip." (See page 121.)

Hoo-Hoo—See National Leather Belt Co.

Houghton & Co., E. F., 240 W. Somerset St., Philadelphia, Pa. "Vim."

Hudson Belting Co., 1-3 Eaton Pl., Worcester, Mass. "Climax," "Rival," "Hydro," "Mermaid."

Hunt Co., Henry C., 261 Franklin St., Boston, Mass. (See page 117.)

Hutchinson Bros. Cut Leather Co., 1926 W. Eighth St., Cincinnati, O.

Hydro—See Hudson Belting Co.

Jewell Belting Co., 55 Trumbull St., Hartford, Conn.

Johnson & Co., W. L., 134 Washington Ave., Endicott, N. Y. "Tuffide."

Kaenjay—See Auto Leather Mfg. Co.

Kork-O-Grip—See Hide Leather & Belting Co.

Latigo—See Perkins-Campbell Co.

Leather Parts Co., 1619-21 Prospect St., Indianapolis, Ind.

Leather Products Co., Gest & Evans Sts., Cincinnati, O.

Mermaid—See Hudson Belting Co.

Missouri Belting Co., 1021-29 S. Grand Ave., St. Louis, Mo. "Endurmo."

Monarch—See Bradford Belting Co.

Mooney Belting Co., 344 W. Sixth St., Cincinnati, O. "Cino."

National Leather Co., 161 South St., Boston, Mass.

National Leather Belt Co., 342 E. 38th St., New York, N. Y. "Hoo-Hoo."

Norwich Belt Mfg. Co., N. Main St., Norwich, Conn.

Page Belting Co.—See Eckhouse & Co.

Palmer & Co., N., 571 Iranistan Ave., Bridgeport, Conn. "Charter Oak," "Apex."

Paragon—See Doerner & Co.

Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. "Latigo." (See page 317.)

Rahmann & Co., Geo., 31 Spruce St., New York, N. Y. "Comber."

Raniville Co., F., 241-49 Pearl St., Grand Rapids, Mich.

Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.

Rhoads & Sons, J. E., 12 N. Third St., Philadelphia, Pa. "Tannate."

Rival—See Hudson Belting Co.

Rock Oak—See Schieren Co.

Royal—See Schieren Co.

Schieren Co., Chas. A., 76 Ferry St., New York, N. Y. "Duxbak, "Bull's Head," "Rock Oak," "Royal," "Eagle," "Casco," "Dixie."

Tannate—See Rhoads & Sons.

Taylor Belting Co., 247 S. Meridian St., Indianapolis, Ind.

Tuffide—See Johnson & Co.

Vim—See Houghton & Co.

Weatherhead-Thompson Co., Pawtucket, R. I.

Wetprufe—See Hide, Leather & Belting Co.

Williams & Sons, I. B., 9 Orchard St., Dover, N. H. "Cocheco."

Wing & Co., J. T., 129 Woodward Ave., Detroit, Mich.

BELTS, Aviators' Safety

Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) (See page 301.)

Spalding & Bros., A. G., 126 Nassau St., New York, N. Y.

BELTS, COTTON—See Belts, Endless Fabric

BELTS, Endless Fabric

(For Leather Belts—See Belting, Leather; also Belts, V; for Wire Belts—See Belts, Spiral Wire)

A-B-C—See American Brake-Lining Co.

Advance Automobile Accessories Corp., 1603 S. Michigan Blvd., Chicago, Ill.

Advance Packing & Supply Co., 80 E. Lake St., Chicago, Ill. "Vulcam." (See page 669.)

Alltex Weaving & Specialty Co., 212 Broadway, New York, N. Y. (See page 667.)

American Brake-Lining Co., Lansdale, Pa. "A.-B.-C." (See page 669.)

Bear-Cat Products Co., Capitol Hill Sta., Oklahoma City, Okla.

Bond Co., Charles, 520 Arch St., Philadelphia, Pa. "Fabritex."

Brophy Belting & Supply Co., Perry St., Madison, Ind.

Brown Mfg. Co.—See Cassidy Co.

Buettner Co., Charles H., Cincinnati, O.

Cassidy Co., Inc., Edward A., 23 W. 43rd St., New York, N. Y. (Sales Department for Brown Mfg. Co., Arthur S., Tilton, N. H. "Tilton." (See page 87.)

Curry Co., J. W., 2615 Cummins St., Cincinnati, O.

Deford Co., 729 Atlantic Ave., Boston., Mass.

Diamond Holdfast Rubber Co., 33 Auburn Ave., Atlanta, Ga.

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."

Empire Weaving & Belting Corp., East Rochester, N. Y. "Tuftex."

Fabritex—See Bond Co.

Fisher Mfg. Co., 735 O St., Lincoln, Neb.

Gates Rubber Co., Broadway & Tennessee St., Denver, Colo. "Vulco."

Geisel Co., Otto E., 3200-06 Oxford St., Philadelphia, Pa.

General Tanning Corp., Chester, Mt. Vernon & Medborn Aves., Irvington, N. J.

Germantown—See Smith Belting Co.

Gilmer Co., L. H., Philadelphia, Pa. (See page 123.)

Lakewood Fabric Belting & Mfg. Co., 1518 Highland Ave., Lakewood, O.

Lockwood Mfg. Co., Kansas City, Mo. (See page 323.)

Main Belting Co., 1319 Carpenter St., Philadelphia, Pa.

Master-Cord Belt Co., 3102 Downing St., Denver, Colo.

Modern Belt & Web Co., Emerson Tower Bldg., Baltimore, Md.

Motor Belt & Mfg. Co., Kansas City, Mo. "Old Hickory." (See page 121.)

Multibestos Co., Walpole, Mass. (See page 661.)

Old Hickory—See Motor Belt & Mfg. Co.

Polson Rubber Co., Doan Ave. & Nickel Plate R. R., Cleveland, O.

Powers Mfg. Co., Waterloo, Iowa. (See page 593.)

Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.

Rie-Nie—See Durkee-Atwood Co.

Rusco—See Russell Mfg. Co.

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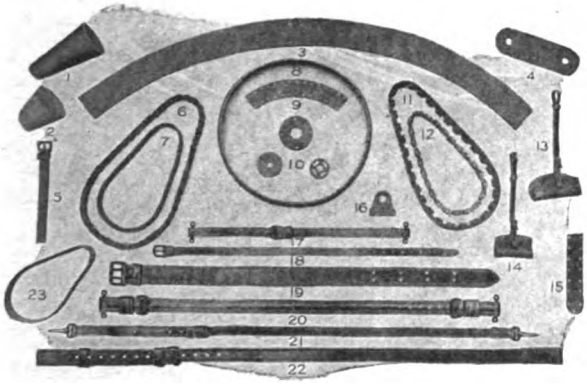
PRODUCTS of the Automotive Division of the Graton & Knight Manufacturing Company, as illustrated below, are made on an engineering basis.

Our automotive engineers have worked long to bring forth automotive leathers that endure. Their success is shown by the many letters received from our satisfied customers.

Remember, there are more than sixty-eight years of experience in tanning leather and making leather products, behind these products.



The following list represents the principal Automobile Leathers which we manufacture:

1 & 2. Universal Joint Boots.
3. Clutch Leathers—square end.
4. Leather Links.
5. Boot Straps.
6. Laminated "V" Fan Belts.
7. Solid "V" Fan Belts.
8. Clutch Leathers—endless.
9. Steering Wheel Covers.
10. Magneto Coupling Discs.
11. "V" Fan Belts—with blocks.
12. Link "V" Fan Belts.
13. Standard Crank Holders.
14. Special Crank Holders.
15. Liners.
16. Special Washers.
17. Back Top Straps.
18. Tire Straps.
19. Rebound Straps.
20. Hood Straps.
21. Front Top Straps.
22. Tail-board Straps.
23. Flat Fan Belts.

No matter what your needs in this line may be, send us specifications and we will promptly quote prices and submit samples.

AUTOMOTIVE DIVISION

THE GRATON & KNIGHT MFG. CO.

Oak Leather Tanners, Makers of Belts and other Leather Products

WORCESTER, MASS., U. S. A.

Branches and Distributors in all Principal Cities

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BELTS, Endless Fabric (Continued)

Russell Mfg. Co., 508 Russell Ave., Middletown, Conn. "Rusco." (See page 121.)

Smith Belting Co., Manning J., 39 E. Ashmead St. (Germantown), Philadelphia, Pa. "Germantown." (See page 121.)

Tingley & Co., Chas. O., Ross St. & St. George Ave., Rahway, N. J.

Tilton—See Cassidy Co.

Tuftex—See Empire Weaving & Belting Corp.

Vulcan—See Advance Packing & Supply Co.

Vulco—See Gates Rubber Co.

Wing & Co., J. T., 129 Woodward Ave., Detroit, Mich.

BELTS, ENDLESS FABRIC, FOR FORDS—See Belts, Fan

BELTS, Fan, for Fords

(Adjustable and endless belts of Leather, Rawhide and Woven Fabric)

Advance Automobile Accessories Corp., 1603 S. Michigan Blvd., Chicago, Ill.

Almco—See Auto Leather Mfg. Co.

Auto Leather Mfg. Co., Arlington, N. J. "Kaenjay," "Almco." (See page 133.)

Automotive Leather Products Co., Park Ave. & 139th St., New York, N. Y. "Sho-Tan."

Avey Leather Goods Mfg. Co., 904-10 Evans St., Cincinnati, O.

Badger Handle Co., 415-19 Third St., Milwaukee, Wis.

Bantlin Co., Julius J., Cincinnati, O. (See page 505.)

Bear-Cat Products Co., Capitol Hill Sta., Oklahoma City, Okla.

Beaver—See Mechanical Rubber Co.

Blue Ribbon—See McMonies, J. R.

Bond Co., Charles, 520 Arch St., Philadelphia, Pa. "Sterling."

Boston Leather Specialties, 30 Merrimac St., Boston, Mass.

Buettner Co., Charles H., Cincinnati, O.

Central Brass & Fixture Co. Segler & Hughes Sts., Springfield, O.

Champney—See Mitchell & Smith.

Chibeco—See Chicago Belting Co.

Chicago Belting Co., 113-25 N. Green St., Chicago, Ill. "Chibeco."

Chicago Rawhide Mfg. Co., 1301 Elston Ave., Chicago, Ill. "Krome."

Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.

Cloud Accessories Corp., 1408 S. Wabash Ave., Chicago, Ill. "Morgancord."

Coe & Brown, 204 George St., New Haven, Conn.

Curry Co., J. W., 2615 Cummins St., Cincinnati, O.

Deford Co., 729 Atlantic Ave., Boston, Mass.

Detroit Clutch Cover Co., 17 Woodward Ave., Detroit, Mich.

Detroit Leather Works, 863 E. Lafayette Blvd., Detroit, Mich. (See page 125.)

Doerner & Co., 4127 32d St., Cincinnati, O. "Paragon."

Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Factory Distributors for Page Belting Co., Concord, N. H.)

E-Z-Put-On—See Paulus, Alfred H.

Empire Weaving & Belting Corp., East Rochester, N. Y. "Tuftex."

Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for "G. & K." Belts.) (See page 125.)

Flex-O-Tyte—See Stephens Rubber Co.

G. & K.—See Graton & Knight Mfg. Co.

Gates Rubber Co., Broadway & Tennessee St., Denver, Colo. "Vulco."

Geisel Co., Otto E., 3200-06 Oxford St., Philadelphia, Pa.

General Tanning Corp., Chester, Mt. Vernon & Medborn Aves., Irvington, N. J.

Gilmer Co., L. H., Philadelphia, Pa. (See page 123.)

Graton & Knight Mfg. Co., Worcester, Mass. "G. & K." (See page 119.)

Hager & Son, Chas., 1926 Broadway, New York, N. Y.

Hagstrom Bros. Mfg. Co., Lindsborg, Kans.

Hide Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind. "Wetprufe," "Adheso." (See page 121.)

Holtite Spring Belt Co., 195 Paterson St., Paterson, N. J.

Hunt Co., Henry C., 261 Franklin St., Boston, Mass. (See page 117.)

Indigan—See National Leather Co.

Jessop & Thompson, 1421 S. Michigan Ave., Chicago, Ill.

Kaenjay—See Auto Leather Mfg. Co.

Krome—See Chicago Rawhide Mfg. Co.

Lakewood Fabric Belting & Mfg. Co., 1516 Highland Ave., Lakewood, N. J.

Latigo—See Perkins-Campbell Co.

Lins Mfg. Co., W. R. (Roxborough), Philadelphia, Pa. "Linsco."

Linsco—See Lins Mfg. Co.

McElroy Belting & Hose Co., 276-300 Truman St., Hammond, Ind.

McMonies, J. R., 1911 N. Dakota St., Spokane, Wash. "Blue Ribbon."

Mechanical Rubber Co., 307 W. Randolph St., Chicago, Ill. "Usco," "Beaver."

Mikesell Brothers Co., 176-78 N. La Salle St., Chicago, Ill. (See page 297.)

Mitchell & Smith, 1090-92 Commonwealth Ave., Boston, Mass. "Champney." (See page 699.)

Morgancord—See Cloud Accessories Corp.

Multibestos Co., Walpole, Mass. (See page 661.)

Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. "Nathigo." (See page 321.)

Nathigo—See Nathan Novelty Mfg. Co.

National Leather Co., 161 South St., Boston, Mass. "Indigan."

National Leather Belt Co., 342 E. 88th St., New York, N. Y.

Norwich Belt Mfg. Co., N. Main St., Norwich, Conn.

Page Belting Co.—See Eckhouse & Co.

Palmer & Co., N., 571 Iranistan Ave., Bridgeport, Conn.

Paragon—See Doerner & Co.

Paulus, Alfred H., 2507-11 Potter St., Philadelphia, Pa. "E-Z-Put-On."

Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. "Latigo." (See page 317.)

Powers Mfg. Co., Waterloo, Ia. (See page 593.)

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Old Hickory CORD BELTS

Flat and V-Shaped—"Built to Last"

Dealers say they have yet to find an owner of a pleasure car, truck or tractor who doesn't want an Old Hickory Cord Belt the moment he sees one. Jobbers say that Old Hickory Cord Belts are the first items of the orders—"pullers for more business."

Each belt is faultlessly manufactured from heavy Sea Island Fabric, treated with an asbestos compound that holds the belt to the pulleys without chance for friction. OLD HICKORY CORD BELTS are made for every make and model of motor car. They stand up under hard punishment. They are endless. They last!

Motor Belt & Manufacturing Company

Sole Manufacturers of OLD HICKORY CORD BELTS

KANSAS CITY MISSOURI

This box contains six Old Hickory Cord Belts. Sealed as evidence of law for this

The HLB Line

of Leather Fan Belts and Leather Parts

for Cars, Trucks, Tractors

Wetprufe Flat Fan Belting in Handy Rolls

Vee Sol, "V" Fan Belting

Vee Flex, "V" Fan Belting

Fan Belts for all Automotive Products.

Leathertex Cone Clutch Facings; Disc Clutch Facings.

Anti-Squeak Frame Padding; Leather Tire Straps and Cut Lacings.

Discs, Boots, Gaskets, Washers, etc.

Write for samples and prices.

Hide Leather & Belting Co.

233 S. Meridian Street, Indianapolis, U. S. A.

RUSCO PRODUCTS

Tests by engineers result in the selection of RUSCO Products as standard equipment for many of America's foremost cars.

Rusco Brake Lining
Disc and Cone Clutch Facing
Endless Fan Belts
Anti-Squeak Webbing
Woven Strapping for Auto Tops—and Tire Straps

For Ford Cars:

Transmission Lining
Endless Fan Belts
Cam Brakes

The Russell Manufacturing Co.

508 Russell Ave., Middletown, Conn.

New York City Chicago Detroit

Smith Fan Belts

Does the pulley side of the belt you use soon develop cuts and cracks and so break prematurely? All ordinary fabric belts do. If you wish to avoid this and find how good a really scientifically built fabric belt can be, order a trial lot of SMITH BELTS. The price is right too.

Woven endless fan belts for all cars. Also Ford Transmission Lining, Anti-Squeak, Webbing and Tape.

Manning J. Smith Belting Co.

39 East Ashmead Street

Germantown Philadelphia

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BELTS, Fan, for Fords (Continued)

Prince Auto Fabric Mfg. Co., 4101 Fort Hamilton Ave., Brooklyn, N. Y.

R-E—See Roose Mfg. Co.

Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.

Rhoads & Sons, J. E., 12 N. Third St., Philadelphia. Pa.

Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E." (See pages 129, 151, 325 and 327.)

Rose Mfg. Co., Frank, Hastings, Neb. (See page 751.)

Rugg & Co., E. L., Newark, O.

Rusco—See Russell Mfg. Co.

Russell Mfg. Co., 508 Russell Ave., Middletown, Conn. "Rusco." (See page 121.)

Self Adjusting Belt Co., Watertown, S. Dak.

Sensation—See Voorhees Rubber Mfg. Co.

Sho-Tan—See Automotive Leather Products Co.

Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo. "Flex-O-Tyte."

Sterling—See Bond Co.

Thermoid Rubber Co., Trenton, N. J.

Tuftex—See Empire Weaving & Belting Corp.

Unisco—See Buettner Co.

Usco—See Mechanical Rubber Co.

Voorhees Rubber Mfg. Co., 20-56 Bostwick Ave., Jersey City, N. J. "Sensation."

Vulco—See Gates Rubber Co.

Wetprufe—See Hide Leather & Belting Co.

Whitehouse Mfg. Co., 42 Elm St., Newark, N. J. (See page 637.)

Williams & Sons, I. B., 9 Orchard St., Dover, N. H.

Woodworth Mfg. Co., 1-29 Starr Ave., Binghamton, N. Y.

BELTS, Spiral Wire

(For Leather Belts—See Belting, Leather; also Belts, V; for Fabric Belts—See Belts, Endless Fabric)

Calcutts—See Gardner Wire Co.

Gardner Wire Co., 5643 Race Ave., Chicago Ill. "Calcutts."

Hebb, Geo. A., 70 William St., Newark, N. J

Kelley, A. F., 178 S. Main St., Providence, R. I. "Kello."

Kello—See Kelley, A. F.

Self Adjusting Belt Co., 420 First Ave., N. E., Watertown, S. Dak.

Webb Mfg. Co., 245-47 N. J. R. R. Ave., Newark, N. J. (See page 851.)

Wickwire-Spencer Steel Corp., Worcester, Mass. (See pages 829 and 909.)

Wilson, Robert P., 20 Clinton St., Newark, N. J.

BELTS, V

(For Flat or Round Leather Belts—See Belting, Leather; for Fabric Belts—See Belts, Endless Fabric; for Wire Belts—See Belts, Spiral Wire)

Algco—See Auburn Leather Goods Co.

Almco—See Auto Leather Mfg. Co.

Auburn Leather Goods Co., 3 Miller St., Auburn, N. Y. "Algco."

Auto Leather Mfg. Co., Arlington, N. J. "Kaenjay," "Almco." (See page 133.)

Automotive Leather Products Co., Park Ave. & 130th St., New York, N. Y. "Sho-Tan."

Badger Handle Co., 415-19 Third St., Milwaukee, Wis.

Bantlin Co., Julius J., Cincinnati, O. (See page 505.)

Black Panther Corp., 2406 S. Robinson St., Oklahoma City, Okla.

Boston Leather Specialties, 30 Merrimac St., Boston, Mass.

Calsco—See Chicago Auto Leather Specialty Co.

Chibeco—See Chicago Belting Co.

Chicago Auto Leather Specialty Co., 6637 S. Halsted St., Chicago, Ill. "Calsco."

Chicago Belting Co., 113-25 N. Green St., Chicago, Ill. "Chibeco."

Chicago Rawhide Mfg. Co., 1301 Elston Ave., Chicago, Ill.

Coe & Brown, 204 George St., New Haven, Conn.

Craig Mfg. Co., 802 N. 16th St., Cedar Rapids, Ia.

Detroit Leather Works, 863 E. Lafayette Blvd., Detroit, Mich. "Flexo." (See page 125.)

Duckwall Belting & Hose Co., 201-05 N. West St., Indianapolis, Ind. (See page 637.)

Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Factory Distributors for Page Belting Co., Concord, N. H.).

Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for "G. & K." Belts.) (See page 125.)

Flexo—See Detroit Leather Works.

Granite—See Rahmann & Co.

Graton & Knight Mfg. Co., Worcester, Mass. "Spartan." (See page 119.)

Hide Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind. "Vee Sol," "Vee Flex." (See page 121.)

Hildick, Thomas H., 256 Market St., Newark, N. J.

Hudson Belting Co., 1-3 Eaton Pl., Worcester, Mass.

Hunt Co., Henry C., 261 Franklin St., Boston, Mass. (See page 117.)

Kaenjay—See Auto Leather Mfg. Co.

Kontak—See Rahmann & Co.

Master Link Belt Mfg. Co., Oklahoma City, Okla.

Mechanical Belt Co., 4032 Ravenswood Ave., Chicago, Ill. "Crowe."

Latigo—See Perkins-Campbell Co.

Mesinger Mfg. Co., H. & F., Austin Pl. & E. 144th St., New York, N. Y.

Motor Belt & Mfg. Co., Kansas City, Mo. "Old Hickory." (See page 121.)

National Leather Belt Co., 342 E. 38th St., New York, N. Y.

National Leather Co., 161 South St., Boston, Mass.

Old Hickory—See Motor Belt & Mfg. Co.

Page Belting Co.—See Eckhouse & Co.

Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. "Latigo." (See page 317.)

Powers Mfg. Co., Waterloo, Ia. (See page 593.)

Rahmann & Co., Geo., 31 Spruce St., New York, N. Y. "Kontak," "Granite."

Raniville Co., F., 241-49 Pearl St., Grand Rapids, Mich.

Rhoads & Sons, J. E., 12 N. Third St., Philadelphia, Pa.

Schieren Co., Chas. A., 76 Ferry St., New York, N. Y.

Sho-Tan—See Automotive Leather Products Co.

Spartan—See Graton & Knight Mfg. Co.

Sutherland Co., F. L., 139 Beaubien St., Detroit, Mich. (See page 803.)

Vee Flex—See Hide Leather & Belting Co.

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Gilmer WOVEN ENDLESS FAN BELTS

Factory equipment on more than 80% of the cars built in America.

Built to fit exactly-built of basically correct material to best resist heat, oil and moisture.

Individually wrapped. Each belt stenciled "Gilmer." Each wrapper marked with group number and makes and models of cars the belt will fit.

Packed in cartons of 10 belts of one size. 29 groups comprise the complete stock and cover every car that uses a flat type fan belt.

Ask your jobber.

L. H. GILMER CO.

PHILADELPHIA, PA.

The exact belt for any car is easily ascertained by referring to the chart below.

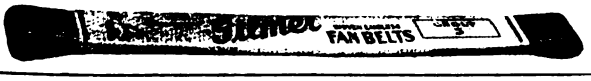
The Standard Belt at a Standard Price

Throughout the U. S.

$1.00

WITH THESE EXCEPTIONS:
FORDS 50c MAXWELL $1.25

Make	Year	Model
GROUP 1		
Ford	1911-16	T
National	1917-18-19	Highway 12
Stearns-Knight		Eight
GROUP 2		
Ford	1917-18-19-20	T
GROUP 2A		
Ford	1921 Beginning 8-1-20	T
GROUP 3		
Allen	1915-16-17-18-19	34-37-41
Buick	1914	B24-B25-B36-B37-B38-B55
Buick	1915	C24-C25-C36-C27-C54-C55-D37
Buick	1916	D54-D55
Chandler	1916-17-18-19-20	All Models
Dodge	1917-18-19-20	
Dort	1920	39L
Gardner	1920	All Models
Geronimo	1918	6A-45
Patterson	1920	All Models
GROUP 4		
Briscoe	1916-17-18-19	B4-24
Dort	1915-16-17-18-19	All Models
Elgin	1916-17-18-19	"6"
Grant	1915-16	T & V.
Hollier	1917-18-19	Six
Woods	1918	
GROUP 5		
Apperson	1916-17-18-19	6
Jeffery	1917	671
Moon	1918-19	6-36
National	1917-18-19	"6"
Overland	1915	80-81
Overland	1916	83
Paige	1920	6-42
Paige	1919	15 Small Six
Saxon	1916-17-18-19	"6"
Willys-Knight	1916	84
Willys-Knight	1920	20
GROUP 6		
American	1917	A
American	1917-18-19-20	B
Auburn	1918	Continental Motor
Crow-Elkhart	1916-17-18-19-20	
Dodge	1915-16	4
Empire	1916-17-18	45-50-51
Geronimo	1917	4A-45
Glide	1916-17-18-19	6-40
Madison	1918-19	
Patterson	1916-17-18-19	6
Stephens	1916-17	Salient 6
Studebaker	1916-17-18-19	4 & 6
Velie	1916-17	22-46
GROUP 7		
Buick	1918	E44-45-46-47-49-50 Late Type
Buick	1919	H44-45-46-47-49-50
Buick	1920	K44-45-46-47-49-50
GROUP 8		
Maxwell	1916-17	25
Mitchell		C40 and C42
GROUP 9		
Maxwell	1918-19	25
GROUP 10		
Elgin	1919-20	H & K
Huffman	1920	W
Lexington	"Minute Man Six"	1917-18-19
Reo "4"	1915-16-17-18-19	R & S
Sayers	1917-18-19-20	P-AP-BP-CP
GROUP 11		
Buick	1916-17	D44-45-46-47
Buick	1917	D34-D35
Buick	1918	E34-E35
Buick	1918	E44-E45-E47-E49-E50 Early Type
GROUP 12		
American	1920	C & Silent Six
Anderson	1916-17-18-19-20	With 7W Motor
Chandler	1914-15	All Models
Columbia	1918-19	Rutenber Motor
Davis	1916-17-18-19-20	6-18 and 20
Haynes	1915-16-17-18-19-20	30-32-46
Kissel	1915-16-17-18	100 Point Six
Liberty	1916-17-18-19	"6"
Noma	1919-20	Series A & B
Paige	1915	6-36
Paige	1916	6-38
Paige	1917-18	6-39
Patterson	1920	With 7W Motor
Tulsa	1920	E1-E2-E3
GROUP 13		
Reo	1915-16-17-18-19	M & N 6 cyl.
GROUP 14		
Maxwell	1915	22-25 S-H Starter
GROUP 15		
Maxwell	1915	22-25 G & D Starter
GROUP 16		
Maxwell	1920	25
Monroe	1918-19-20	M4
GROUP 17		
Biddle	1916-17-18-19	D & H
Bour Davis	1920	21-SFR
Case	1915-16	25-30
Chalmers	1916-17-18-19-20	25-A-B-C-D
Maibohm	1917-18-19-20	B
Stearns-Knight	1920	L4
GROUP 1		
Briscoe	1920	4-34
Hudson	1916-17-18-19-20	Super Six
Kissel	1919-20	"Custom Built Six"
GROUP 19		
Columbia	1920	C-R
Huffman	1920	R
Lexington	1920	S
Mitchell	1918-19-20	D40-E40-E42-F40
GROUP 20		
Climber	1919-20	T & S
Jeffery	1917	472
Marmon	1916-17	34
Mercer	1916-17-18-19-20	"4"
Overland	1916	75
Overland	1917-18-19	90 & 90 Country Club
Overland	1917-18	85—4
Roamer	1918	D4-75
Templar	1917-18-19	4-45
GROUP 21		
Essex	1919-20	
GROUP 22		
King	1915-16	D & E
GROUP 23		
Allen	1920	43
Buick	1921	21-44-45-46-47-48-49-50
King	1917-18-19-20	EE-F-G-H
Moon	1920	6-48
ReVere	1918-19-20	C-D-E
GROUP 24		
Chevrolet	1916-17	490
GROUP 25		
Paige	1916	6-46
Paige	1917	6-51
Paige	1918	6-55 1st 4150 cars
Saxon	1920	125
GROUP 26		
Chalmers	1915	26-26B-26C-29-32A
Chalmers	1916	32B
Dorris	1919-20	6-80
Dorris	1919-20	6-80
Liberty	1919-20	10B—After 37500 Cars
Paige	1918-19-20	6-55—After 4150 Cars
GROUP 27		
Commonwealth	1917-18-19-20	All
Dixie Flyer	1920	H 5-50
Overland	1920	4—Light Four
GROUP 28		
Anderson	1920	Series 30
Auburn	1920	6-39 H & K
Columbia	1920	C-7R
Harroun	1920	
Jordan	1920	M
Noma	1920	Series C
Paige	1921	6-66
Patterson	1920	6-50
Velie	1920	18
Wescott	1920	With 7R Continental Motor



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BELTS, V (Continued)

Vee Sol—See Hide Leather & Belting Co.
Williams & Sons, I. B., 9 Orchard St., Dover, N. H.

BENCH LATHES—See Lathes, Bench

BENCH SHEARS — See Shears, Bench

BENCH VISES—See Vises, Machinists

BENCHES, Motor Driven Saw

Whitney & Son, Baxter D., Winchendon, Mass. (See pages 477 and 853.)

BENDERS, Angle

(Hand Power)

Excelsior Tool & Machine Co., 31st St. & Ridge Ave., East St. Louis, Ill. "X L C R."
Hinman & Co., D. A., Sandwich, Ill.
Wallace Supplies Mfg. Co., 420 Orleans St., Chicago, Ill.
X L C R—See Excelsior Tool & Machine Co.

BENDING MACHINES—See Machines, Wood Bending

BENDINGS, Wood

(For Seat Backs; for Metal Seat Backs—See Backs, Metal Seat)

Campbell & Dann Mfg. Co., Tullahoma, Tenn.
Dann Bros. & Co., 84 Franklin St., New Haven, Conn.
Pfau Mfg. Co., Cincinnati, O.
Shepard & Sons, H. G., James & River Sts., New Haven, Conn.

BERTHS, CAR—See Beds or Berths, Car

BEVEL GEARS FOR FORDS—See Gears, Special Ratio

BILGE BAILERS—See Bailers, Motor Boat, Automatic; also Pumps, Motor Boat, Engine Driven Bilge

BILGE PUMPS—See Pumps, Motor Boat Bilge

BILLIKENS, RADIATOR—See Ornaments, Radiator

BILLING SYSTEMS—See Books, Accounting

BINDERS, LOOSE LEAF—See Books, Accounting and Cost System

BINDING, Mat and Carpet

(Metal Binding for Carpet, Linoleum or Rubber Mats)

Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.

BINDINGS, Upholstery

Backstay Machine & Leather Co., Oak & Howard Sts., Union City, Ind.
Bauer Bros. Mfg. Co., 1025-27 Richmond St., Cincinnati, O.
Boulevard—See Woodward & Cochey.
Carter Co., George R., Connersville, Ind.
Cincinnati Welt Co., 118 Opera Pl., Cincinnati, O.
Detroit Narrow Fabric Co., 46 Lafayette St., E., Detroit, Mich.
Edwards Mfg. Co., 1339 Clinton Ave., Detroit, Mich.
Kerr Specialty Co., 12th St. & G. T. R. R., Detroit, Mich.
Landers Bros. Co., Dept. A 2, Toledo, O. (See page 605.)
United Stay Co., Kendall Sq., Cambridge, Mass.
Wade Mfg. Co., 52 Haverhill St., Brockton, Mass.
Woodward & Cochey, 550 Broad St., Lynn, Mass. "Boulevard." (See page 125.)

BINS, SHOP—See Racks, Metal Tool

BITS, Battery Strap—See Drills and Bits, Battery Strap

BLADES, Hack Saw

(For Hack Saw Frames—See Frames, Hack Saw)

A. A. A.—See Atkins & Co.
Arrow Head—See Jennings & Co.
Atkins & Co., E. C., 402 S. Illinois St., Indianapolis, Ind. "A. A. A."
Blancke Co., L. C., 10-12 Thomas St., New York, N. Y. (Sole Distributors for Blancke Twist Drill & Tool Co., Taunton, Mass.)
Blancke Twist Drill & Tool Co—See Blancke Co.
Boston Saw & Tool Co., 324 Harrison Ave., Boston, Mass. "Knoxall."
Caldwell Tool Mfg. Co., 87 Warren St., New York, N. Y.
Diamond Saw & Stamping Works, 357-61 Seventh St., Buffalo, N. Y. "Sterling."
Eureka—See Thompson & Son Co.
Goodell-Pratt Co., Greenfield, Mass.
Griffin Co., G. W., Franklin, N. H.
Jennings & Co., C. E., 71-73 Murray St., New York, N. Y. "Arrow Head."
Knoxall—See Boston Saw & Tool Co.
Milford—See Thompson & Son Co.
Modern Equipment Co., 27 Haymarket Sq., Boston, Mass.
Napier Saw Works, Myrick Bldg., Springfield, Mass.
Peerless Machine Co., 1615 Racine St., Racine, Wis.
Racine Tool & Machine Co., 1439 Junction Ave., Racine, Wis.
Red Devil—See Smith & Hemenway.
Simplex Tool & Supply Co., 127 Oliver St., Boston, Mass.
Smith & Hemenway, 130 Colt St., Irvington, N. J. "Red Devil."
Stapf & Co., John B., Dunkirk, N. Y.
Starrett Co., L. S., Athol, Mass.
Sterling—See Diamond Saw & Stamping Works.
TT.—See Thompson & Son Co.
Thompson & Son Co., Henry G., 277 Chapel St., New Haven, Conn. "Milford," "Eureka," "XL," "TT."
Utility—See West Haven Mfg. Co.

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EVANS-LAWRIE COMPANY

Replacement distributors for manufacturers of high grade standard parts

Graton & Knight Fan Belts
Clutch Leathers and Specialties

McCord Gaskets **Fitzgerald Gaskets**

Hayes Wire Wheels **Houk Wire Wheels**

Spring Bolts, Spindle Bolts, Bushings
Axle Shafts, etc., etc.

Manufacturers of standard parts desirous of high grade replacement distribution are invited to correspond with us immediately

EVANS LAWRIE COMPANY
708 BEACON ST BOSTON, MASS.
AUTOMOTIVE SPECIALTIES

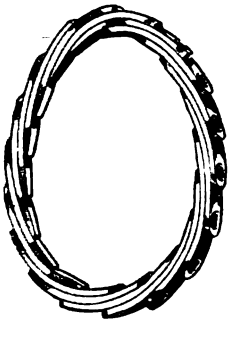
Gimps Welts Bindings

With a special process hot glue fold—stays down forever—and cord will not fall out of the welt.

Working samples sent free from any material, grain and finish—leather or leather substitute.

Woodward & Cochey, Inc.
550 Broad Street ***Lynn, Mass.***

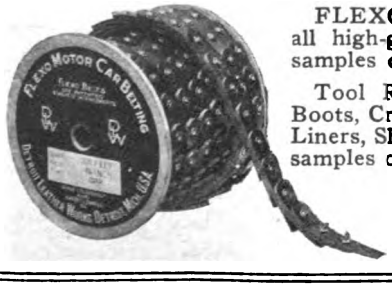
FLEXO Laminated "V" BELTS



Protected by U. S. and Foreign Patents

FLEXO BELTS are made of sections, cut only from solid center back belting hides and are assembled with steel copper-plated rivets. They are made endless with machine screws and nuts and can be readily lengthened, shortened or adjusted without special tools.

FLEXO BELTING in 5/8″ and 3/4″ widths in the Oak Leather on 50 or 100-foot spools is the most popular with the Supply Dealers. Motor Car Dealers usually buy Flexo Belts made up to fit the cars they sell, either open or endless.



FLEXO BELTS are giving complete satisfaction on all high-grade cars, trucks and tractors. Prices and samples on request.

Tool Rolls, Universal Joint and Steering Knuckle Boots, Crank Handle Holders, Magneto Covers, Straps, Liners, Shims and all leather parts, made to order. Send samples or blue prints for quotations.

DETROIT LEATHER WORKS
683 East Lafayette Boulevard DETROIT, MICH.

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BLADES, Hack Saw (Continued)

Victor Saw Works, 1 Rowland Ave., Springfield, Mass.

West Haven Mfg. Co., 22 Elm St. (West Haven), New Haven, Conn. "Utility."

XL—See Thompson & Son Co.

BLANKS, GEAR—See Gears, Blank

BLOCKS, CAR EXTRACTING—See Winches and Blocks

BLOCKS, CAR SHIPPING — See Chocks, Car Shipping

BLOCKS, CHAIN—See Blocks or Hoists, Chain

BLOCKS or HOISTS, Chain

(For Portable Cranes—See Cranes, Portable)

Channon Mfg. Co., James H., 223-33 W. Erie St., Chicago, Ill. "Union." **(See page 127.)**

Chisholm-Moore Mfg. Co., Lakeside Ave. & E. 49th St., Cleveland, O. "Cyclone."

Cyclone—See Chisholm-Moore Mfg. Co.

Ford Chain Block & Mfg. Co., Second & Diamond Sts., Philadelphia, Pa. "Tribloc."

Franklin Portable Crane & Hoist Co., 318 West Park, Franklin, Pa.

Harrington Son & Co., Edwin, 17th & Callowhill Sts., Philadelphia, Pa. "Peerless."

Jackson Truck Hoist Co., Belleville, Ill.

Peerless—See Harrington Son & Co.

Reading Chain & Block Corp., 2140 Adams St., Reading, Pa.

Round & Son, D., 7625 Broadway, Cleveland, O. "Simplex," "Superior."

Simplex—See Round & Son.

Speidel, J. G., W. Buttonwood & Gordon Sts., Reading, Pa.

Superior—See Round & Son.

Tribloc—See Ford Chain Block & Mfg. Co.

Union—See Channon Mfg. Co.

Wright Mfg. Co., Lisbon, O.

Yale & Towne Mfg. Co., Stamford, Conn. **(See page 935.)**

BLOW TORCHES—See Torches, Gasoline

BLOWOUT PATCHES—See Sleeves, Tire Repair; also Shoes, Inner Tire

BLUE, Mechanics'

(For use when adjusting bearings)

Benoit, Constant A., Brooklyn, N. Y. **(See page 225.)**

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."

Dutch—See Van Cleef Bros.

Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." **(See page 277.)**

Norwesco—See Northwestern Chemical Co.

Rie-Nie—See Durkee-Atwood Co.

Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."

BLUE PRINTING MACHINES — See Machines, Blue Printing

BOARD BRACES FOR FORDS—See Braces, Running Board

BOARDS, COWL, FOR FORDS — See Cowls, Dash

BOARDS, DASH—See Dashes, Wood

BOARDS, DISPLAY—See Boards, Gasket Display

BOARDS, FLOOR—See Parts, Wood Automobile

BOARDS, FLOOR FOR FORDS—See Boards, Floor or Foot

BOARDS, Floor or Foot for Fords

Williams Mfg. Co., Gloyd Bldg., Kansas City, Mo.

BOARDS, Gasket Display

Laraway Specialty Co., Cleveland, O.

BOARDS, INSTRUMENT, FOR FORDS—See Cowls, Dash

BOARDS, Running

(Pressed or Stamped Steel, Wood and Linoleum or Rubber Covered Running Boards)

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (New York and New England Distributors for Standard Boards.) **(See page 275.)**

Bossert Corp., Utica, N. Y. **(See page 897.)**

Brummeler-Ruggles Metal Products Co., 1215 Ionia Ave., S. W., Grand Rapids, Iowa.

Buffalo Pressed Steel Co., Buffalo, N. Y. **(See page 655.)**

Builders Mfg. Co., 828-30 N. Wells St., Chicago, Ill. **(See page 491.)**

Champion Milk Cooler Co., 52-60 Owego St., Cortland, N. Y.

Cochran Piston Corp., Detroit, Mich. **(See page 735.)**

Crosby Co., Buffalo, N. Y. **(See page 899.)**

Detroit Auto Dash Co., 1501 E. Philadelphia Ave., Detroit, Mich.

Detroit Pressed Steel Co., Detroit, Mich. **(See page 1203.)**

Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.

Erdle Perforating Co., 171 York St., Rochester, N. Y. **(See page 633.)**

Forsyth Bros. Co., Harvey, Ill. **(See page 1067.)**

Hotchkiss Metal Form Co., 16 Jarvis St., Binghamton, N. Y. **(See page 345.)**

Hydraulic Pressed Steel Co., of The Hydraulic Steel Co., Cleveland, O. **(See page 439.)**

Lamco—See Lehman Mfg. Co.

Lawson Co., F. H., Dept. D, Cincinnati, O. **(See page 327.)**

Lehman Mfg. Co., 310 Fourth St., Camnelton, Ind. "Lamco." **(See page 151.)**

Michigan Crown Fender Co., N. Huron St., Ypsilanti, Mich.

Michigan Stamping Co., 11631 Mack Ave., Ypsilanti, Mich.

Michigan Truck & Lumber Co., Holly, Mich.

Moline Pressed Steel Co., Fifth St., East Moline, Ill.

Morrison Steel Products Co., 26-28 E. North St., Buffalo, N. Y.

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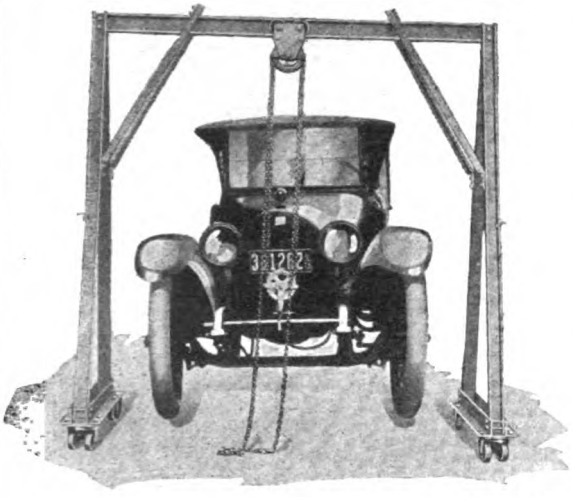
James H. Channon Mfg. Co.

223-233 W. ERIE ST. **CHICAGO, U. S. A.**

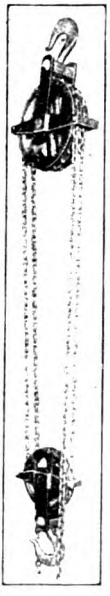
Hardware Specialties for Automobiles and Garages. No. 100 Portable All-Steel Garage Crane: Equipped with combined I-beam traveler and chain hoist. Traveler furnished with steel roller bearings. Crane equipped with roller bearing swivel casters. Capacity 1 ton. Height over all 8 ft. Length over all 7 ft. 9 in. Clearance under rail 7 ft. 7 in. Width over all 3 ft. Weight 400 lbs.



Price each.....$135.00

This crane can be furnished to handle any load up to six ton.

WESTON DIFFERENTIAL CHAIN HOISTS

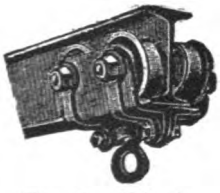


Price List of Complete Block

No.	Capacity Tons	Will Lift Feet	Price Each
1	¼	6	$ 36.00
2	½	7	42.00
3	1	8	56.00
4	1½	8½	72.00
5	2	9	90.00
6	3	10	120.00

FOUR-WHEEL I-BEAM TROLLEYS

Figure 117



Finish—Black

A light easy-working trolley for 5 to 7 inch I-beam. Malleable iron frame, grey iron wheels, running on steel shafts.

Number	Capacity, Lbs.	Price, Each
1	1000	$32.00
2	2000	42.00
3	3000	54.00

"UNION" LOCK LINK CHAIN

ILLUSTRATION SHOWS EXACT SIZE 2/0

LIST PRICE, PER 100 FEET.....$5.00

Skid Chain Repair Parts, Quick Repair Links, Lever Fasteners, Skid Hooks, Side Chains

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BOARDS, Running (Continued)

Motors Metal Mfg. Co., 5936 Milford Ave., Detroit, Mich.

Parish & Bingham Corporation, Cleveland, O. (See pages 427 to 430.)

Pfau Mfg. Co., Cincinnati, O.

Rochester Pressed Steel Co., 35-37 Ford St., Rochester, N. Y.

Spiro Mfg. Co., C., 68-72 E. 131st St., New York, N. Y. "Uniq."

Standard Steel Box Co., Villars Ave., Bridgeville, Pa.

Standley Skid Chain Co., Boone, Iowa. (See page 679.)

Stanwood Equipment Co., 308 N. Michigan Blvd., Chicago, Ill. (See page 91.)

Uniq—See Spiro Mfg. Co.

BOARDS, Running, for Fords

(Linoleum, Rubber and Aluminum covered wood boards)

Hudson Motor Specialties Co., 1934 Arch St., Philadelphia, Pa. "Slip-on."

Lawco—See Lawson Co.

Lawson Co., F. H., Dept. D, Cincinnati, O. "Lawco." (See page 327.)

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

Michigan Truck & Lumber Co., Holly, Mich.

R-E—See Roose Mfg. Co.

Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y.

Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E." (See pages 129, 151, 325 and 327.)

Slip-on—See Hudson Motor Specialties Co.

Spiro Mfg. Co., C., 68-72 E. 131st St., New York, N. Y. "Uniq."

Uniq—See Spiro Mfg. Co.

BOATS, FLYING—See Section I

BOATS MOTOR—See Section I

BODIES, Automatic Dumping, for Fords

Anthony Co., Streator, Ill. "Rocker." (See page 129.)

Jennings Automatic Dump Body, Roanoke, Va.

Rocker—See Anthony Co.

BODIES, AUTOMOBILE—See Bodies, Metal Automobile; also Bodies, Wood Automobile

BODIES, AUTOMOBILE, FOR FORDS—See Bodies, Special Passenger

BODIES, COMMERCIAL—See Bodies, Metal Commercial; also Bodies, Wood Commercial; also Bodies, Special Dumping

BODIES, COMMERCIAL, FOR FORDS—See Bodies, Special Commercial; also Bodies, Automatic Dumping

BODIES, DUMPING—See Bodies, Special Dumping

BODIES, DUMPING, FOR FORDS—See Bodies, Automatic Dumping

BODIES, Metal Automobile

(For Wood Automobile Bodies—See Bodies, Wood Automobile)

Abbott-Downing Truck & Body Co., S. Main St., Concord, N. H.

Abresch Co., Chas., 397 Fourth St., Milwaukee, Wis.

Aircraft Engineering Corp., 517 E. 79th St., New York, N. Y.

American Body Co., 1255-63 Niagara St., Buffalo, N. Y.

Armstrong Co., M., 433 Chapel St., New Haven, Conn.

Auto Body Co., Lansing, Mich. (See page 129.)

Auto Metal Body Co., 346-52 Collins Ave., Pittsburgh, Pa.

Auto Metal Body Co., 531 Worthington St., Springfield, Mass.

Babcock Co., H. H., Watertown, N. Y. (See page 133.)

Baker, R & L Co., Cleveland, O. "Raulang." (See page 19.)

Beaudette Co., O. J., Pontiac, Mich.

Biddle & Smart Co., Amesbury, Mass.

Blue Ribbon Body Co., 1720 Fairfield Ave., Bridgeport, Conn.

Bowe Carriage Co., 711 Orange St., Wilmington, Del.

Brewster & Co., Queensboro Bridge Plaza, Long Island City, N. Y.

Briggs Carriage Co., 11 Cedar St., Amesbury, Mass.

Briggs Mfg. Co., Clay Ave., Detroit, Mich.

Brooks-Ostruk Co., 225 W. 65th St., New York, N. Y.

Brown Body Corp., Superior Ave. & E. 32d St., Cleveland, O.

Brunn & Co., 980 Ellicott St., Buffalo, N. Y.

Brunn's Carriage Mfg. Co., 1140-48 Main St., Buffalo, N. Y.

Budd Mfg. Co., Edward G., Hunting Park Ave. & 25th St., Philadelphia, Pa.

Caffrey Co., Chas. S., Tenth & Market Sts., Camden, N. J.

Central Mfg. Co., 18th St. & Columbia Ave., Connersville, Ind.

Chauncy Body Corp., 2601 Archer Ave., Chicago, Ill. (See page 131.)

Collings Carriage Co., Front & Arch Sts., Camden, N. J.

Collins Vehicle Woodwork Co., R. N., 3900 Chouteau Ave., St. Louis, Mo.

Cooling Carriage Co., 406 French St., Wilmington, Del.

Currier-Cameron Co., Amesbury, Mass.

Cutter, J. Frank, 30 Amherst St., Cambridge, Mass.

Dunbar Automobile Body Co., 40th St. & Lancaster Ave., Philadelphia, Pa.

Erby & Sons Co., Wm., 121-27 W. Grand Ave., Chicago, Ill.

Erdman-Guider Co., 2290 Woodward Ave., Detroit, Mich. (See page 131.)

Farnham-Nelson Co., 18-22 Arboretum Rd., Roslindale, Mass.

Fisher Body Corp., Harper & Piquette Sts., Detroit, Mich.

Fitz Gibbon & Crisp, Calhoun St. & P. & R. R. R., Trenton, N. J.

Fleetwood Metal Body Co., Fleetwood, Pa.

Griswold Motor & Body Co., 5838 Commonwealth Ave., Detroit, Mich.

Hale-Kilburn Corp., 1800 Lehigh Ave., Philadelphia, Pa.

Hayes-Ionia Co., Seventh St. & Muskegon Ave., Grand Rapids, Mich.

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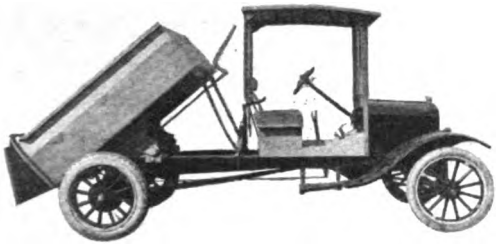

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FOR FORD CARS

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BODIES, Metal Automobile (Continued)

Hayes Mfg. Co., 4525 Maybury Grand Ave., Detroit, Mich.

Hayes & Miller Co., 518-22 E. 57th St., New York, N. Y.

Healey & Co., Broadway & 51st St., New York, N. Y.

Holbrook Co., 166 West End Ave., New York, N. Y.

Hollander & Morrill, Amesbury, Mass.

Hudson Auto Body Corp., 507-09 W. 35th St., New York, N. Y.

Judkins Co., J. B., Merrimac, Mass.

Kimball & Co., C. P., 3900 S. Michigan Ave., Chicago, Ill.

Kingsbury-Leahy Co., 135 Hudson Ave., Albany, N. Y.

Lancaster Body Co., Fountain & New Holland Aves., Lancaster, Pa.

Lang Body Co., Cleveland, O.

Lee Coach & Body Works, Don, 12th & Main Sts., Los Angeles, Calif.

Limousine-Carriage Mfg. Co., 3515 Michigan Ave., Chicago, Ill.

Lind—See Ohio Body & Blower Co.

Locke & Co., 437-53 E. 56th St., New York, N. Y.

Longdin-Brugger Co., Fond du Lac, Wis. (See page 149.)

Lowry Top & Body Co., Gaul & Adams Sts., Philadelphia, Pa.

MacInnis Bros., 120-22 22d St., Toledo, O.

Martin Metal Mfg. Co., Wichita, Kans.

Martin Truck & Body Corp., W. Market St. & Highland Ave., York, Pa.

Mechanic Auto Construction Co., Jules., 248-56 Craft Ave., Pittsburgh, Pa. (See page 131.)

Milburn Wagon Co., 3134 Monroe St., Toledo, O.

Miller, Hicks & Hewitt, 509-15 W. 56th St., New York, N. Y.

Model Body Corp., 3261 Bellevue Ave., Detroit, Mich.

Morton & Brett, 311-15 E. 23rd St., Indianapolis, Ind.

Mullins Body Corp., 182 Franklin Ave., Salem, O.

New Haven Carriage Co., New Haven, Conn. (See page 131.)

New Star Auto Metal Works, 1718-20 S. Wabash Ave., Chicago, Ill.

Ohio Body & Blower Co., 9205 Detroit Ave., Cleveland, O. "Lind."

Paco Mfg. Co., Franklin & Seventh Sts., Peoria, Ill.

Pontiac Body Co., Pontiac, Mich.

Portland Body Works, Portland, Ind.

Pullar Co., James, 5 Mechanic St., Hartford, Conn.

Racine Mfg. Co., Sixth & Meade Sts., Racine, Wis.

Reiss Body Co., 3029 Baker St., Detroit, Mich.

Robbins Body Corp., 1148 Division St., Indianapolis, Ind.

Royal Motor Body Co., 211-15 W. 19th St., New York, N. Y.

Rubay Co., 1318-28 W. 78th St., Cleveland, O.

Schildwachter Carriage Co., Park Ave. & 128th St., New York, N. Y.

Schutte Body Co., Charles, 137 E. Marion St., Lancaster, Pa.

Seaman Co., W. S., 486 Virginia St., Milwaukee, Wis.

Sidney Mfg. Co., Sidney, O.

Smith-Springfield Body Corp., 324 Main St., Springfield, Mass.

Springfield Coach Works, Springfield, Mass.

Springfield Harness Co., 55-59 Dwight St., Springfield, Mass.

Standard Auto Radiator Co., 244 W. 53rd St., New York, N. Y.

Stewart Co., W. F., 1023 Harriet St., Flint, Mich.

Stockbridge Body Co., 130 Union St., Springfield, Mass.

Superior Body Co., 360 St. Georges Ave., Rahway, N. J.

Thompson Co., E. J., Lexington Ave. & Thomas Blvd., Pittsburgh, Pa.

Troy Body Co., Crawford St. & Big Four Ry., Troy, O.

Union City Body Co., Union City, Ind.

Walker Carriage Co., Merrimac, Mass.

Walker Body Co., Amesbury, Mass.

Widman & Co., J. C., 1143 14th Ave., Detroit, Mich.

Willoughby Co., Dwyer Ave. & Turner St., Utica, N. Y.

Wilson Body Co., C. R., 1660 Clay Ave., Detroit, Mich.

Wright Carriage Body Co., 2430 Third Ave., Moline, Ill.

York Body Corp., Linden & Belvidere Aves., York, Pa.

BODIES, Metal Commercial Car

(For Wood Commercial Bodies—See Bodies, Wood Commercial; for Dumping Bodies—See Bodies, Special Dumping)

Abbott-Downing Truck & Body Co., S. Main St., Concord, N. H.

Acme Wagon Co., Emigsville, Pa.

Albert Bros., 11-13 Cannon St., New York, N. Y.

American Body Co., 1255-63 Niagara St., Buffalo, N. Y.

Armstrong-Johnston Mfg. Co., W. First Ave. & Perry St., Columbus, O.

Auburn Wagon Co., 523 W. Race St., Martinsburg, W. Va.

Auglaize Motor Car Co., New Bremen, O.

Auto Body Co., Lansing, Mich. (See page 129.)

Babcock Co., H. H., Watertown, N. Y. (See page 133.)

Bee Automobile Co., 15-21 N. Church St., Allentown, Pa.

Biehls Wagon & Auto Body Works, 31 S. Fifth St., Reading, Pa.

Bowe Carriage Co., 711 Orange St., Wilmington, Del.

Brown Body Corp., Superior Ave. & E. 22d St., Cleveland, O.

Budd Mfg. Co., Edward G., Hunting Park Ave. & 25th St., Philadelphia, Pa.

Butler Mfg. Co., 1324 Grand Ave., Kansas City, Mo.

Collings Carriage Co., Front & Arch Sts., Camden, N. J.

Columbian Steel Tank Co., 1601-21 W. 12th St., Kansas City, Mo.

Continental Trailer Corp., 3625 Superior St., Detroit, Mich.

Cooling Carriage Co., 406 French St., Wilmington, Del.

Economy Hoist & Body Co., 405 Lexington Ave., New York, N. Y. (Sole Distributors for Providence Body Co., Providence, R. I.) (See page 527.)

Elberg-Keller Body Mfg. Co., 29th & Cherry Sts., Kansas City, Mo.

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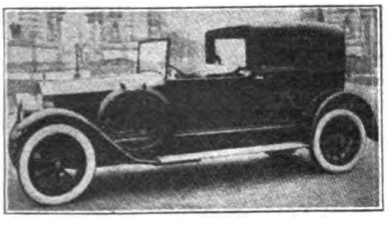

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New Haven Conn.

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ERDMAN-GUIDER COMPANY

Builders of High Grade

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BODIES, Metal Commercial Car (Continued)

Erby & Sons Co., Wm., 121-27 W. Grand Ave., Chicago, Ill.
Erdman-Guider Co., 2290 Woodward Ave., Detroit, Mich. (See page 131.)
Field Body Corp., Owosso, Mich. (See page 141.)
Forsyth Bros. Co., Harvey, Ill. (See page 1067.)
Gilhool Body Works, Scranton, Pa.
Hannibal Truckbody Co., 1001 Collier St., Hannibal, Mo.
Harrison Co., Robert, 324-28 W. First St. (S. Boston), Boston, Mass.
Hayes-Ionia Co., Seventh St. & Muskegon Ave., Grand Rapids, Mich.
Heil Co., 1136-40 Montana Ave., Milwaukee, Wis. (See page 147.)
Hendrick Mfg. Co., 39-75 Dundaff St., Carbondale, Pa.
Highland Body Mfg. Co., 716 Elmwood Pl., Cincinnati, O.
Hopkins Mfg. Co. of N. Y., Hanover, Pa.
Hydraulic Hoist Mfg. Co., 292 Walnut St., St. Paul, Minn. "Superior."
Interboro Hoist & Body Corp., Ely, William & Henry Sts., Long Island City, N. Y.
Johnston Commercial Body Co., Fort Smith, Ark.
K-L—See Kingsbury-Leahy Co.
K. & J.—See Kilbourne & Jacobs Mfg. Co.
Kilbourne & Jacobs Mfg. Co., Columbus, O. "K. & J." (See page 145.)
Kingsbury-Leahy Co., 135 Hudson Ave., Albany, N. Y. "K-L."
Lancaster Body Co., Fountain & New Holland Aves., Lancaster, Pa.
Lang Body Co., Cleveland, O.
Lee Loader & Body Co., 2333 S. LaSalle St., Chicago, Ill. (See page 1003.)
Longdin-Brugger Co., Fond-du-Lac, Wis. (See page 149.)
McDermott Body Corp., 123-25 Sixth St., Long Island City, N. Y.
McFarlane & Co., H., 526-33 S. Canal St., Chicago, Ill.
Mansfield Steel Corp., 288 E. Milwaukee Ave., Detroit, Mich.
Martin-Parry Corp., W. Market St. & Highland Ave., York, Pa.
Marx, Geo. B., 192-206 Newell St., Brooklyn, N. Y.
Mechanic Auto Construction Co., Jules, 248-56 Craft Ave., Pittsburgh, Pa. (See page 131.)
Metropolitan Body Co., 430-34 Grand St., Bridgeport, Conn.
Model Body Corp., 3261 Bellevue Ave., Detroit, Mich.
Moline Plow Co. (Stephens Motor Works), Moline, Ill.
New Haven Carriage Co., New Haven, Conn. (See page 131.)
Niagara Motor Boat Co., 175 Sweeney St., North Tonawanda, N. Y.
Niles Car & Mfg. Co., Erie St., Niles, O.
Olesen Auto Body & Wagon Works, 901-11 W. North Ave., Chicago, Ill.
Peters Auto Body & Spring Works, 418-20 Ensor St., Baltimore, Md.
Pirsch & Sons Co., Peter, Kenosha, Wis. (See page 133.)
Providence Body Co.—See Economy Hoist & Body Co.
Schildwachter Carriage Co., Park Ave. & 128th St., New York, N. Y.
Schutte Body Co., Charles, 137 E. Marion St., Lancaster, Pa.
Sidney Mfg. Co., Sidney, O.
Sior & Son, Heinrich, 245-47 Floyd St., Brooklyn, N. Y.
Standard Commercial Body Corp., 423-31 E. 104th St., New York, N. Y.
Stockbridge Body Co., 130 Union St., Springfield, Mass.
Stover Steel Tank & Mfg. Co., Hancock Ave., Freeport, Ill.
Superior—See Hydraulic Hoist Mfg. Co.
Troy Body Co., Crawford St. & Big Four Ry., Troy, O.
Truck Engineering Co., 7061 Broadway Cleveland, O.
Universal Body Co., Chicago St., Jonesville, Mich.
Waterbury Body Co., Thomaston, Conn.
Whitman Agricultural Co., St. Louis, Mo.
Willoughby Co., Dwyer Ave. & Turner St., Utica, N. Y.
Woonsocket Wagon Mfg. Co., 15 Worrall St., Woonsocket, R. I.
Wright Carriage Body Co., 2430 Third Ave., Moline, Ill.
Wright Co., Thomas, 71-73 Colden St., Jersey City, N. J.
York Body Corp., Linden & Belvidere Aves., York, Pa.
York Carriage Co., Franklin & Hay Sts., York, Pa.

BODIES, TRUCK—See Bodies, Metal Commercial; also Bodies, Wood Commercial; also Bodies, Special Dumping

BODIES, TRUCK, FOR FORDS—See Bodies, Special Commercial; also Bodies, Automatic Dumping

BODIES, Wood Automobile

(For Metal Automobile Bodies—See Bodies, Metal Automobile)

Abbott-Downing Truck & Body Co., S. Main St., Concord, N. H.
Abresch Co., Chas., 397 Fourth St., Milwaukee, Wis.
American Body Co., 1355-63 Niagara St., Buffalo, N. Y.
Amesbury Body Co., Carriage Ave., Amesbury, Mass.
Armstrong Co., M., 438 Chapel St., New Haven, Conn.
Armstrong-Johnston Mfg. Co., W. First Ave. & Perry St., Columbus, O.
Auto Body Co., Lansing, Mich. (See page 129.)
Auto Metal Body Co., 531 Worthington St., Springfield, Mass.
Auto Truck Steel Body Co., 3028-46 Carroll Ave., Chicago, Ill.
Automotive Manufacturers' Associates, 14th & Farnam Sts., Omaha, Nebr. (Sales Representatives for Badger Auto Body Co., Milwaukee, Wis.)
Badger Auto Body Co.—See Automotive Manufacturers Associates.
Baker R. & L., Co., Cleveland, O. "Raulang." (See page 19.)
Bela Body Co., Clark St., Amesbury, Mass.
Blue Ribbon Body Co., 1720 Fairfield Ave., Bridgeport, Conn.
Blue Streak—See Izett Auto Body & Repair Shop.
Bowe Carriage Co., 711 Orange St., Wilmington, Del.
Brewster & Co., Queensboro Bridge Plaza, Long Island City, N. Y.
Bridgeport Body Co., 363 Fairfield Ave., Bridgeport, Conn.

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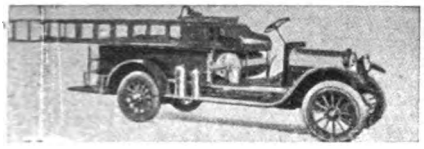

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Founded 1845
Watertown New York

Batteries Guaranteed a Year and a Half

STORAGE ACME BATTERY
Automobile & Motor Boat Batteries

ACME Storage Batteries are guaranteed to give satisfactory service for a term of a year and a half from the date of purchase. Most ACME Batteries do much better than that.

In spite of the fact that ACME Batteries are designed to give a full stream of current, and although on account of their unusually sturdy construction they are remarkably free from short-circuiting, buckling and other battery troubles, they sell for no more than ordinary batteries.

The man who sells ACME Batteries sells satisfaction.

DEALERS WRITE FOR ATTRACTIVE PROPOSITION IN OPEN TERRITORY.

STORAGE ACME BATTERY
House Lighting Batteries

ACME STORAGE BATTERY CORP.
POUGHKEEPSIE NEW YORK

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BODIES, Wood Automobile (Continued)

Bridgeton Hearse & Ambulance Co., Jefferson St., Bridgeton, N. J.
Briggs Mfg. Co., 55 Leuschner Ave., Detroit, Mich.
Briscoe Motor Corp., Jackson, Mich.
Brown Body Corp., Superior Ave. & E. 32d St., Cleveland, O.
Brownell & Burt, 10 Washington St., Taunton, Mass.
Brunn & Co., 980 Ellicott St., Buffalo, N. Y.
Brunns' Carriage Mfg. Co., 1140-42 Main St., Buffalo, N. Y.
Carrm Auto Body Co., 1926 Broadway, New York, N. Y.
Central Auto Body Co., 15 Orchard St., Hartford, Conn.
Chauncy Body Corp., 2601 Archer Ave., Chicago, Ill. (See page 131.)
Chicago Carriage & Trimming Co., 2514-20 S. Michigan Ave., Chicago, Ill.
Chicago Coach & Carriage Co., 1223-31 S. Michigan Ave., Chicago, Ill.
Cincinnati Auto Body Co., 1938-48 W. Eighth St., Cincinnati, O.
Clarke, Frank J., 417 Third Ave., Brooklyn, N. Y.
Collings Carriage Co., Front & Arch Sts., Camden, N. J.
Collins Vehicle Woodwork Co., R. N., 3900 Chouteau Ave., St. Louis, Mo.
Continental Auto Top Mfg. Co., 3900 Washington Ave., St. Louis, Mo.
Cooling Carriage Co., 406 French St., Wilmington, Del.
Currier-Cameron Co., 35 Elm St., Amesbury, Mass.
Dann Bros. & Co., 34 Franklin St., New Haven, Conn.
Dunbar Automobile Body Co., 40th St. & Lancaster Ave., Philadelphia, Pa.
Erby & Sons Co., Wm. 121-27 W. Grand Ave., Chicago, Ill.
Erdman-Guider Co., 2290 Woodward Ave., Detroit, Mich. (See page 131.)
Farnham-Nelson Co., 18-22 Arboretum Rd., Roslindale, Mass.
Fehring Carriage Co., 601-09 Third St., Columbus, Ind.
Fitz Gibbon & Crisp, Calhoun St. & P. & R. R. R., Trenton, N. J.
Flagler Co., 159 Carlton Ave., Brooklyn, N. Y.
Globe Body Co., Union & Sycamore Sts., Fostoria, O.
Graff Mfg. Co., 2919 Indiana Ave., Chicago, Ill.
Gregg-Wm. D. Rogers Co., 1926 Arch St., Philadelphia, Pa.
H. & M. Body Corp., 608 Center St., Racine, Wis.
Harvey Top & Body Co., 918-20 Main St., Buffalo, N. Y.
Hayes & Miller Co., 518-22 E. 57th St., New York, N. Y.
Healey & Co., Broadway & 51st St., New York, N. Y.
Henney & Co., John W., Louis Ave. & Jackson St., Freeport, Ill.
Holcker-Elberg Mfg. Co., 16th & McGee Sts., Kansas City, Mo.
Hudson Auto Body Corp., 507-09 W. 35th St., New York, N. Y.
Hughey & Son, Wm. J., 2518-20 Michigan Ave., Chicago, Ill.
Immel Co., 1675 S. High St., Columbus, O.
Izett Auto Body & Repair Shop, 1432-60 Speer Blvd., Denver, Colo. "Blue Streak."
Jones & Pimm Co., 422 W. Onondaga St., Syracuse, N. Y.
Kimball & Co., C. P., 3900 S. Michigan Ave Chicago, Ill.
Kingsbury-Leahy Co., 135 Hudson Ave., Albany, N. Y
Kratzer Carriage Co., 100 S. First St., Des Moines, Iowa.
Lamco—See Lehman Mfg. Co.
Lancaster Body Co., Fountain & New Hollan Aves., Lancaster, Pa.
Lang Body Co., Cleveland, O.
Lee Coach & Body Works, Don, 12th & Mai Sts., Los Angeles, Cal.
Lehman Mfg. Co., 310 Fourth St., Cas nelton, Ind. "Lamco." (See page 151.
Ligonier Auto Body Co., 65-68 Water St Ligonier, Ind.
Limousine-Carriage Mfg. Co., 3515 Michiga Ave., Chicago, Ill.
Limousine Top Co., 1900 Factory St., Kalamazoo, Mich.
Locke & Co., 427-53 E. 56th St., New York N. Y.
Mac Innis Bros., 120-22 22d St., Toledo, O.
McNear, George W., Cambria St., Boston Mass.
Mann-Aldrich Carriage Co., 1300 Lincoln St Denver, Colo.
Martin-Parry Corp., W. Market St. & High land Ave., York, Pa.
Mechanic Auto Construction Co., Julet 248-56 Craft Ave., Pittsburgh, Pa. (See page 131.)
Michigan Hearse & Motor Co., Grand Rapids Mich.
Miller & Co., A. J., Bellefontaine, O.
Millspaugh & Irish, S. La Salle St. & English Ave., Indianapolis, Ind.
Model Body Corp., 3261 Bellevue Ave., Detroit Mich.
New Haven Carriage Co., New Haven Conn. (See page 131.)
Novelty Carriage Works, 813 Second Ave Spokane, Wash.
Paco Mfg. Co., Franklin & Seventh Sts Peoria, Ill.
Raulang—See Baker, R. & L., Co.
Rech-Marbaker Co., Eighth St. & Girard Ave Philadelphia, Pa.
Reiss Body Co., 3029 Baker St., Detroit, Mich
Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. (See pages 129, 151, 325 and 327.)
St. Louis Car Co., 3000 N. Broadway, St Louis, Mo.
Schildwachter Carriage Co., Park Ave. & 128th St., New York, N. Y.
Schutte Body Co., Charles, 137 E. Marion St Lancaster, Pa.
Seaman Co., W. S., 486-90 Virginia St., Milwaukee, Wis.
Sedan Body Co., Union City, Ind.
Shields Carriage Co., 11 Carriage Ave., Amesbury, Mass.
Sisman Co., Andrew C., 1221 Beaufait Ave Detroit, Mich.
Springfield Harness Co., 55-59 Dwight St Springfield, Mass.
Steffen-Van Steenwyk Co., 619 W. Seventh St Sioux City, Iowa.
Stockbridge Body Co., 130 Union St., Springfield, Mass.
Stone & Sons, C., 1658-74 Ogden Ave., Chicago Ill.
Streator Hearse & Body Co., 910 E. La Rue St., Streator, Ill.
Superior Body Co., 360 St. George's Ave., Rahway, N. J.
Terrill Bros., 130 Hamilton St., Rahway, N. J
Thompson Co., Robert, 1015 S. Grand Ave., Los Angeles, Cal. (See page 1119.)
Troy Body Co., Crawford St. & Big Four Ry. Troy, O.

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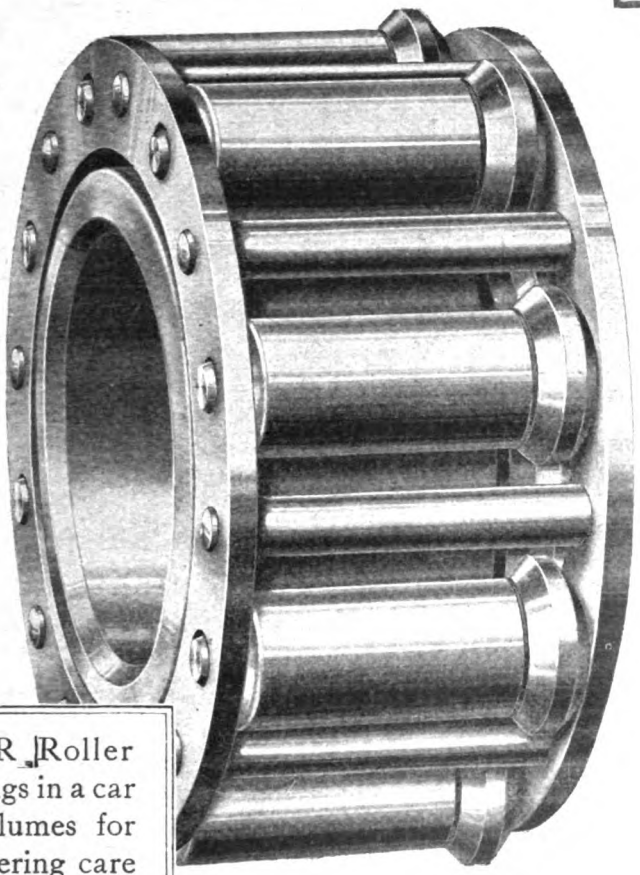
CARRIES THE LOAD TAKES THE THRUST



BOWER Roller Bearings in a car speaks volumes for the engineering care that particular car is favored with.

BOWER
ROLLER BEARING CO.
Detroit Michigan

Exclusive Bower Features

Separate bearing surfaces for load and thrust. Parallel raceways. Self-aligning. Never need adjusting. Does not develop end thrust under loads. Will not bind or end-slip.

BOWER SAVES POWER

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BODIES, Wood Automobile (Continued)

Turnbull Motor Truck & Wagon Co., Defiance, O.
Union City Body Co., Union City, Ind.
Walker Carriage Co., Merrimac, Mass.
Walker & Werner, 207-13 Fayette St., Peoria, Ill.
Willoughby Co., Dwyer Ave. & Turner St., Utica, N. Y.
Woonsocket Wagon Mfg. Co., 15 Worrall St., Woonsocket, R. I.
Wright Carriage Body Co., 2480 Third Ave., Moline, Ill.

BODIES, Wood Commercial Car

(For Metal Commercial Bodies—See Bodies, Metal Commercial; for Dumping Bodies—See Bodies, Special Dumping)

Abbott-Downing Truck & Body Co., S. Main St., Concord, N. H.
Abresch Co., Chas., 397 Fourth St., Milwaukee, Wis.
Acme Wagon Co., Emigsville, Pa.
Albert Bros., 11-13 Cannon St., New York, N. Y.
Albright Co., S. S., 13th & U. Sts., Sacramento, Cal.
American Body Co., 1255-63 Niagara St., Buffalo, N. Y.
Anderson Motor Co., Rock Hill, S. C.
Armstrong-Johnston Mfg. Co., W. First Ave. & Perry St., Columbus, O.
Auto Body Co., Lansing, Mich. (See page 129.)
Auto Body Works, Pierce Ave. & Eighth St., Appleton, Wis.
Auto Products Co., Station H, Cincinnati, O. (Dealers.) (See page 1193.)
Automobile Body Co., 5911 14th Ave., Detroit, Mich.
Automotive Manufacturers' Associates, 14th & Farnam Sts., Omaha, Nebr. (Sales Representatives for Badger Auto Body Co., Milwaukee, Wis.)
Babcock Co., H. H., Watertown, N. Y. (See page 133.)
Badger Auto Body Co.—See Automotive Manufacturers Associates.
Badger Mfg. Co., Eighth & M Sts., (Havelock) Lincoln, Nebr.
Baker R. & L., Co., Cleveland, O. "Raulang." (See page 19.)
Bailey Mfg. Co., North Wales, Pa.
Bailey & Bowne, Lafayette & Wiley Sts., Utica, N. Y.
Baldwin & Son, D. W., 131 Post St., New Haven, Conn.
Barnett Auto Body Co., 430 Golden Gate Ave., San Francisco, Calif.
Bay City Auto Body Co., Center Ave. & Pere Marquette R. R., Bay City, Mich.
Bennett-Sustrich Co., 1716 W. Lafayette Ave., Detroit, Mich.
Biehls Wagon & Auto Body Works, 31 S. Fifth St., Reading, Pa.
Blue Ribbon Body Co., 1720 Fairfield Ave., Bridgeport, Conn.
Bowe Carriage Co., 711 Orange St., Wilmington, Del.
Bridgeport Body Co., 363 Fairfield Ave., Bridgeport, Conn.
Bridgeton Hearse & Ambulance Co., Jefferson St., Bridgeton, N. J.
Brill Co., J. G., 62nd St. & Woodland Ave., Philadelphia, Pa.
Briscoe Motor Corp., Jackson, Mich.
Brooklyn Commercial Body Co., E. 35th St. & Ave. H, Brooklyn, N. Y.
Brown Body Corp., Superior Ave. & E. 32d St., Cleveland, O.
Brownell & Burt, 10 Washington St., Taunton Mass.
Cantrell & Bro., J. T., Wall St., Huntington N. Y.
Central Auto Body Co., 15 Orchard St., Hartford, Conn.
Champion Wagon Co., Owego, N. Y.
Charlotte Wagon & Auto Co., Charlotte, N. C.
Chicago Carriage & Trimming Co., 3514-20 S Michigan Ave., Chicago, Ill.
Clark Mfg. Co., J. L., 519 High St., Oshkosh, Wis.
Clarke, Frank J., 417 Third Ave., Brooklyn, N. Y.
Collings Carriage Co., Front & Arch Sts., Camden, N. J.
Columbia Wagon Co., Columbia, Pa.
Columbus Body Co., Columbus, O. (See page 141.)
Continental Auto Top Mfg. Co., 3900 Washington Ave., St. Louis, Mo.
Cooling Carriage Co., 406 French St., Wilmington, Del.
Cope Co., 1082-84 Clinton Ave., Irvington, N. J.
Crane & Breed Mfg. Co., 1227 W. Eighth St., Cincinnati, O.
Currier-Cameron Co., 35 Elm St., Amesbury, Mass.
Dann Bros. & Co., 84 Franklin St., New Haven, Conn.
Davenport Body Co., 1507 Rockingham Rd., Davenport, Ia.
Diamond Body Co., Philadelphia, Pa.
Donegan Auto Body & Specialty Co., 339 Trumbull St., Hartford, Conn.
Donigan & Nielson, 743-47 Third Ave., Brooklyn, N. Y.
Eagle Wagon Works, 45 S. Division St., Auburn, N. Y.
Economy Hoist & Body Co., 405 Lexington Ave., New York, N. Y. Sole Distributors for Providence Body Co., Providence, R. I.) (See page 527.)
Elberg-Keller Body Mfg. Co., 29th & Cherry Sts., Kansas City, Mo.
Erby & Sons Co., Wm., 121-27 W. Grand Ave., Chicago, Ill.
Erdman-Guider Co., 2390 Woodward Ave., Detroit, Mich. (See page 131.)
Eureka Co., First St., Rock Falls, Ill.
Field Body Corp., Owosso, Mich. (See page 141.)
Fitz Gibbon & Crisp, Calhoun St., & P. & R. R. R., Trenton, N. J.
Fitz John-Erwin Mfg. Co., Muskegon, Mich.
Ford Body Co., 301 N. Green St., Greensboro, N. Car.
Frazier, B. F., 3614 Smallman St., Pittsburgh, Pa.
Fulton-Walker Co., 20th & Filbert Sts., Philadelphia, Pa.
Geissel & Sons, A., 485-87 N. Third St., Philadelphia, Pa.
General Woodwork Co 1225-35 Budd St., Cincinnati, O.
Gibbons Body Co., 138 Worcester St., Boston, Mass.
Gilhool Body Works, Scranton, Pa.
Golide, Louis, 1874 W. 22d St., Cleveland, O.
Graves Co., L. C., Springboro, Pa.
Great Western Removable Body Co., Fourth & Pierce Sts., Omaha, Neb.
H. & M. Body Corp., 608 Center St., Racine, Wis.
Haberer & Co., Boston St and C. H. & D. Ry., Cincinnati, O.

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FAIRBANKS
Automobile Repair Equipment

FAIRBANKS O.K.

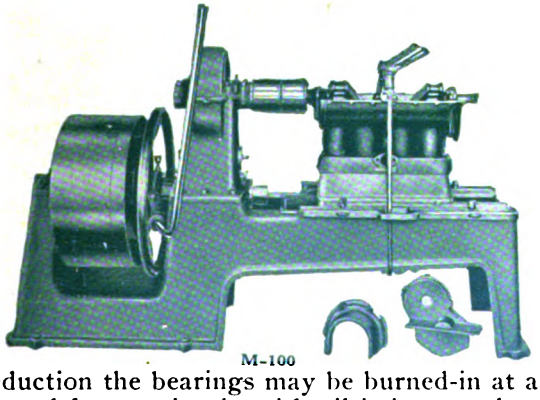
Fairbanks' Worth

Automobile repairing has developed to such an extent that modern and efficient tools are absolutely essential in the up-to-date repair shop. New tools and devices, well designed, and offering guaranteed service, mean repeat orders for the dealer and satisfied customers for the repair man. In these pages you will find some of the popular items in the Fairbanks line—a line which is recognized as the standard throughout the world.

And the Fairbanks line is progressive. It is being increased constantly. The new devices have been tested and approved by experts and when they put their "O. K." on a product, the Fairbanks Company is willing to guarantee it as a real time and labor saver, with its own well-known "O. K."

The Ford and Fordson Special Burning-In Machine

The Ford and Fordson Special Burning-in and Running-in machine is built to stand the test of time and hard usage. A base of one solid casting, a low center of gravity, split bronze bearings and Hyatt roller bearings are all features which insure a satisfactory job.



M-100

By means of a 3½ to 1 gear reduction the bearings may be burned-in at a speed of 175 R. P. M., while the speed for running-in with oil is increased to 600 R. P. M. Experiments and tests have proved that these are the best speeds for perfect work.

One of the main advantages of the Ford and Fordson Special is the fact that the repair man has full view of the operation while the main and connecting rod bearings are being burned-in. After this is completed the motor block is turned and the bearings, connecting rods and pistons are run-in with oil.

STANDARD OF THE WORLD

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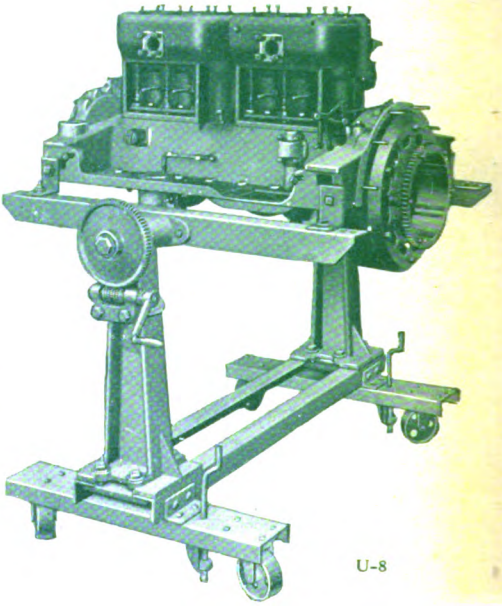
FAIRBANKS
Automobile Repair Equipment

Universal Motor Stand

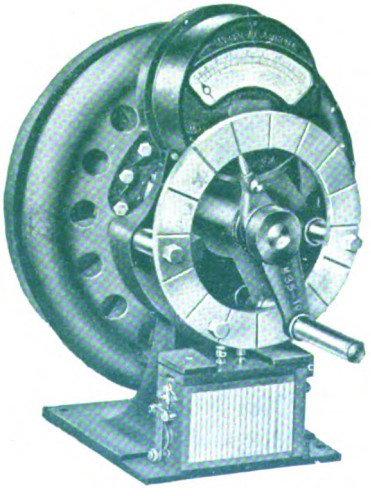
The Fairbanks Universal Motor Stand handles motor blocks of any type with ease. The blocks may be adjusted to any position and secured in that position.

The Universal Motor Stand is made to take all sizes or makes of auto and auto-truck motor blocks, having either three point or four point suspension. The leg brackets move in and out to increase or decrease the distance to fit any motor. The stand is fitted with worm wheel drive, making it possible to place the motor in any required position. It is substantially constructed of angle iron and well riveted throughout. Cast iron brackets support the side members. Four casters permit the stand to be moved easily to position desired, and two lock screws elevate the corners.



U-8

Coil Unit and Magneto Test Stand



M-35

The Coil Unit and Magneto Test Stand (M-35) is designed to test and facilitate the adjustment of the coil units and the magneto. It consists of a coil testing apparatus which is a two ampere model, 156 ammeter, a Ford magneto provided with a crank and rotating spark gap, and a device for clamping the coil unit in place and at the same time making the necessary electrical connections. For this test the magneto ammeter and primary of the coil unit are connected in series. The coil secondary is connected across the rotary spark coil.

When the magneto is revolved the ammeter shows the primary current flowing. Seven-eighths of the number of sparks produced by the passage of the magneto poles in front of the coils per one-sixteenth of a revolution may be counted by watching the rotating spark gap as it passes over the graduated dial. This dial is graduated into 16 parts, the magneto having 16 poles. One good spark should pass over each one-sixteenth revolution of the crank and the current indicated by the ammeter should be between 1.2 and 1.4 amperes

To test the magneto in the car, one terminal of the ammeter is connected to the magneto terminal through an impedance coil and the other terminal is connected to the crank case. With the impedance coil used the meter should indicate 0.8 or more amperes when the engine runs at a moderate speed.

The function of the impedance coil is to cause the indications of the instrument to be substantially independent of the engine speed.

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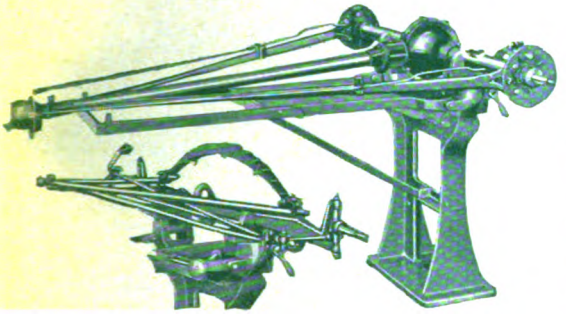
FAIRBANKS
Automobile Repair Equipment

FAIRBANKS O.K.
THE FAIRBANKS COMPANY



M-14

Dixie Combination Front and Rear Axle Stand

The Dixie is a well-designed device for supporting the front and rear axle while overhauling. This stand is equipped with two vises, one tipping to the side to make the axle housing accessible for the removal of the roller bearing sleeve, and the other turning on a spindle to permit the easy removal of the differential and axle shaft. A heavy cast iron removable grease pan is provided to catch the grease and oil from the disassembled differential.

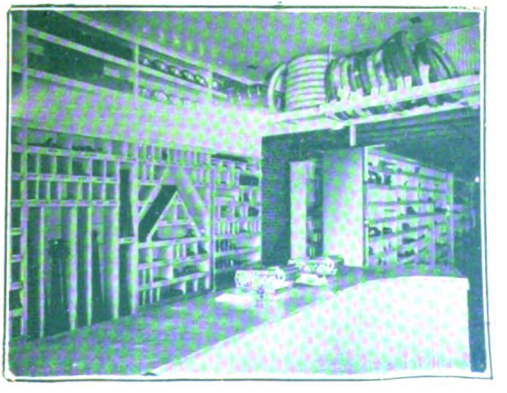
The Dixie Stand has proved very efficient in repair shops. The rear axle can be placed in any position, and the tool tray and axle shaft support can be neatly folded when not in use and can be left until the entire operation is complete.

Make Your Stock Room a Display Room

Fairbanks Servistock units are made in sizes to hold parts stocks of $5,000, $25,000 and $50,000, with supplements for truck and tractor parts.

The bins bear the numbers of parts contained therein and are arranged in numerical order, irrespective of the size or shape of the part.

The Servistock Units can be supplied in either wood or steel. Either style will add to the attractiveness and pulling power of any Service Station, and at the same time will save labor. Everything is at the finger tips of the salesman and in sight of the customer. This system is also an excellent indicator of stock depletion.



S-1 TO S-7

STANDARD OF THE WORLD

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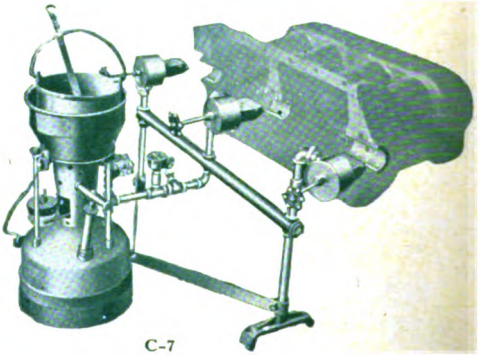
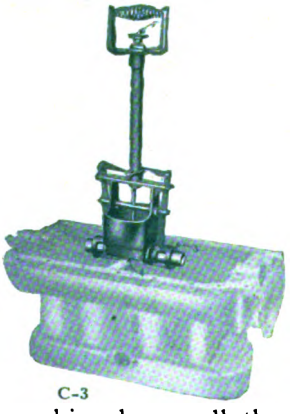
FAIRBANKS
Automobile Repair Equipment

Save Time and Labor on Rebabbitting Jobs

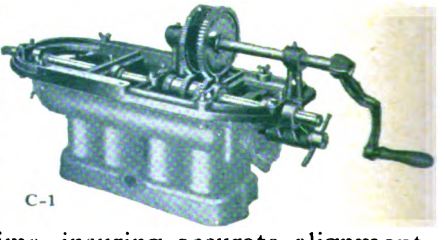
Your profits increase as your time and labor decrease. We can show you how to save time and labor on rebabbitting jobs.

First you must remove the old babbitt from the block. This is easily accomplished with the four way torch, which melts and removes the old bearings and at the same time melts the babbitt for the new bearings.


C-7


C-3

Next fill the ladle-jig with the molten babbitt. Place it over the bearing and give the handle a quarter turn to give it its exact position. Then lift the plunger in the handle and the hot metal will flow into the bearing from both sides at once—the correct way to do it.


C-1

Now place the Bearing Boring Machine in position on the motor block and bore the bearings. This machine bores all three bearings at one time, insuring accurate alignment and a perfect fit of the crankshaft. Simple, isn't it? That is characteristic of all Fairbanks Repair Equipment.

Watch for the "Fairbanks O. K." on all repair equipment.

EXCLUSIVE SALES AGENTS

THE FAIRBANKS COMPANY

Administrative Offices—NEW YORK

Albany	Chicago	New York	Scranton
Baltimore	Cleveland	Paterson	St. Louis
Birmingham	Detroit	Philadelphia	Syracuse
Boston	Hartford	Pittsburgh	Tulsa
Bridgeport	Newark	Providence	Utica
Buffalo	New Orleans	Rochester	Washington

London, Eng. Birmingham, Eng. Glasgow, Scotland
Kingston, Jamaica Paris, France Hamburg, Germany

STANDARD OF THE WORLD

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The Columbus Body Company

COLUMBUS, OHIO

Manufacturers of Pleasure Cars and Commercial Bodies

Automatic Side-Dump Body

FITS ANY CHASSIS

SPECIFICATIONS

BODY—Constructed of all metal throughout; built of 8, 10 and 11 gauge hot rolled steel; substructure 7 gauge, formed and welded.

CAPACITY—	1½ yards	2 yards	3 yards
Inside width..	54 in.	54 in.	60 in.
Inside length.	10 ft.	11 ft.	12 ft.
Inside height.	12 in.	13½ in.	16½ in.
WEIGHT	1100 lbs.	1400 lbs.	1550 lbs.

Made to fit any size or make of chassis from 2 to 5 tons.

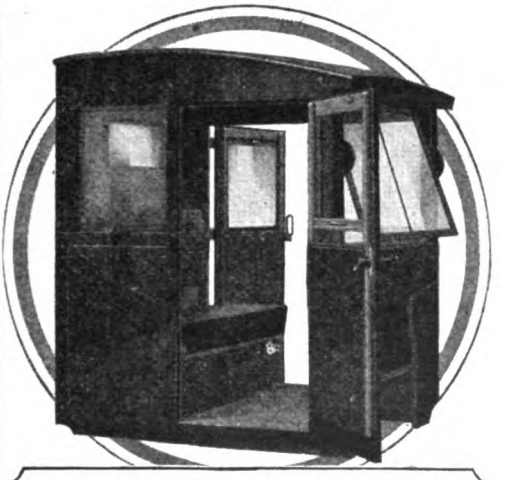
1½ YD. TYPE R BODY—4 ft. 6 in. wide, 1 ft. high, 10 ft. long, inside. Weight, 1100 lbs. Price, $525.00.

2 YD. TYPE R BODY—4 ft. 6 in. wide; 13½ in. high, 11 ft. long, inside. Weight, 1400 lbs. Price, $575.00.

3 YD. TYPE R BODY—5 ft. wide, 16½ in. high, 12 ft. long inside. Weight, 1550 lbs. Price, $625.00.

Automatic Dump Car Co.

1300 Ernsperger St. South Bend, Ind.



Field Cab

FOUR SEASON

New Coupe Style. All-metal exterior. All black enamel finish. Matches any body.

The square construction is exceedingly handsome and substantial.

The FIELD Four Season Cab is constructed entirely of flush panels bolted rigidly together. Steel sash are removable and interchangeable. Double ventilating and rain-vision pressed steel windshield. Rear door on driver's side is especially handy. Special new style rattle-proof, adjustable latch lock. May be shipped knockdown inside 34". Genuine FIELD durable construction and will outlast the car.

FIELD Durable Bodies adjust to fit any truck. Interchangeable units form any body on a single platform. The bolster and stake-pocket construction are unusually substantial. Write for Catalogue.

FIELD BODY CORPORATION OWOSSO, MICH., U. S. A.

World's Largest Builders of Truck Bodies Exclusively

STANDARDIZED MOTOR TRUCK BODIES

For 1 to 5 Ton Motor Trucks

ONE UNIFORM PLATFORM plus A Variety of Body Units } Makes a Large Number of Body Styles

This Means Better Bodies, Quicker Deliveries and Larger Profits To You.

Catalog and Prices On Request.

THE MULHOLLAND COMPANY

Established 1867 DUNKIRK, N. Y.

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BODIES, Wood Commercial Car (Continued)

Hall Air Lock & Railway Supply Co., Oakville, Iowa.

Hanover Bending & Mfg. Co., Factory St., Hanover, Pa.

Harrison Co., Robert, 324-38 W. First St. (S Boston), Boston, Mass.

Henney Co., John W., Louis Ave. & Jackson St., Freeport, Ill.

Hesse & Son Mfg. Co., Wm. G., Leavenworth, Kans.

Hi-Grade—See Commercial Auto Body Co.

Highland Body Mfg. Co., 716 Elmwood Pl., Cincinnati, O.

Hoover Wagon Co., York, Pa.

Hopkins Mfg. Co. of N. Y., Hanover, Pa.

Interboro Hoist & Body Corp., Ely, William & Henry Sts., Long Island City, N. Y.

Izett Auto Body & Repair Shop, 1432-60 Speer Blvd., Denver, Colo. "Perfection," "Nonxl."

Jewett Co., Geo. H., 172-74 Shrewsbury St., Worcester, Mass.

Joynt & Sons, R., 4231 Vermont Ave., Detroit, Mich.

K-L—See Kingsbury-Leahy Co.

Kingsbury-Leahy Co., 135 Hudson Ave., Albany, N. Y. "K-L."

Kipp Wagon Co., 222 E. 24th st., New York, N. Y.

Klinger Bros. Co., 50 Fulton St., Brooklyn, N. Y.

Knightstown Buggy Co., Knightstown, Ind.

Koenig & Luhrs Wagon Co., 320 S. Sixth St., Quincy, Ill.

Kratzer Carriage Co., 100 S. First St., Des Moines, Ia.

Lancaster Body Co., Fountain & New Holland Aves., Lancaster, Pa.

Lang Body Co., Cleveland, O.

Lange Wagon Co., H., S. St. Clair & Eva Sts., E. E., Pittsburgh, Pa.

Lansing Body Co., 504 North Grand Ave., Lansing, Mich.

Lee Coach & Body Works, Don, 12th & Main Sts., Los Angeles, Calif.

Lee Loader & Body Co., 2333 S. La Salle St., Chicago, Ill. (See page 1003.)

Leonhardt Wagon Mfg. Co., 412-20 E. Saratoga St., Baltimore, Md.

Lobes Body Co., 20 N. Railroad Ave., Mt. Vernon, N. Y.

Luedinghaus Quality Motor Trucks, Broadway, Howard to Mound St., St. Louis, Mo. (See page 41.)

Lyons & Co., Hugh, Lansing, Mich.

McCardell & Co., J. R., 395 S. Warren St., Trenton, N. J.

McDermott Body Corp., 123-25 Sixth St., Long Island City, N. Y.

McFarlane & Co., 526-38 S. Canal St., Chicago, Ill.

McKay Carriage Co., Grove City, Pa.

Maremont Mfg. Co., 916-18 S. Wabash Ave., Chicago, Ill. (See page 297.)

Marlin-Parry Corp., W. Market St. & Highland Ave., Indianapolis, Ind.

Martin Truck & Body Corp., W. Market St. & Highland Ave., York, Pa.

Marx, Geo. B., 192-206 Newell St., Brooklyn, N. Y.

Mechanic Auto Construction Co., Jules, 248-56 Craft Ave., Pittsburgh, Pa. (See page 131.)

Meckel, Fred L., 9-13 E. 13th St., Chicago, Ill.

Mertz Co., 704-08 Woodland Ave., Cleveland, O.

Metropolitan Body Co., 430-34 Grand St., Bridgeport, Conn.

Mifflinburg Body Co., Mifflinburg, Pa. (See page 151.)

Milburn Wagon Co., 3134 Monroe St., Toledo, O.

Miller Co., E. M., 118 S. Sixth St., Quincy, Ill.

Miller & Co., A. J. Bellefontaine, O.

Mills-Ellsworth Co., Keokuk, Ia.

Model Body Corp., 3261 Bellevue Ave., Detroit, Mich.

Molzen Co., Peter, 522 W. 30th St., New York, N. Y.

Mount Clemens Truck Body Co., Cass Ave. & G. T. R. R., Mt. Clemens, Mich.

Mulholland Co., Dunkirk, N. Y. (See page 141.)

New Haven Carriage Co., New Haven, Conn. (See page 131.)

New Ideal Wagon Works, 1845 Park Ave., New York, N. Y.

Nicoulin Dray Mfg. Co., Algona, Ia.

Niederhutt Carriage Co., 3556-60 Walnut St., Denver, Colo.

Nonxl—See Izett Auto Body & Repair Shop.

Novelty Carriage Works, 813 Second Ave., Spokane, Wash.

Obenchain-Boyer Co., Logansport, Ind. (See page 1135.)

Obergfell, W. M., 131-37 Ninth St., Jersey City, N. J.

Olesen Auto Body & Wagon Works, 901-11 W. North Ave., Chicago, Ill.

Omaha Body Co., 1539 N. 16th St., Omaha, Neb. "Three-In-One."

Parvis, Jr., & Co., Geo. W., 548-52 Rising Sun Ave., Philadelphia, Pa.

Paterson Vehicle Co., 257-59 Market St., Paterson, N. J.

Patriot Motors Co., Lincoln, Neb.

Perfection—See Izett Auto Body & Repair Shop.

Peters Auto Body & Spring Works, 418-20 Ensor St., Baltimore, Md.

Pfeiffer Auto & Carriage Works, Wm., 25th Ave. & Leavenworth St., Omaha, Neb.

Porter-Brown Auto Body Co., 1807 E. Seventh St., Los Angeles, Cal.

Proctor-Keefe Co., 7741 Dix Ave., Detroit, Mich.

Providence Body Co.—See Economy Hoist & Body Co.

Ranger—See Southern Motor Mfg. Association.

Raulang—See Baker, R. & L., Co.

Rech-Marbaker Co., Eighth St. & Girard Ave., Philadelphia, Pa.

Reedy Auto Truck & Trailer Co., 19 E. Archer St., Tulsa, Okla.

Reiss Body Co., 3029 Baker St., Detroit, Mich.

Ritcheson & Co., A. A., Dallas, Texas.

Roeder Mfg. Co., Fred., 1396-1400 Atlantic Ave., Brooklyn, N. Y.

Schaefer Wagon Co., Gustav, 4166-80 Lorain Ave., Cleveland, O.

Schildwachter Carriage Co., Park Ave. & 128th St., New York, N. Y.

Schnabel & Sons, G. A., 2410 Penn Ave., Pittsburg, Pa.

Scholl & Son, Anton, 880-82 Flushing Ave., Brooklyn, N. Y.

Schubert Wagon Co., August, 1-5 S. Warner St., Oneida, N. Y.

Schukraft & Sons, Wm., 933-43 Fulton St., Chicago, Ill.

Schutte Body Co., Charles, 137 E. Marion St., Lancaster, Pa.

Scott, Auto Body Co., 2334 Lawrence Ave., Denver, Colo.

Sebastian Wagon Co., 425 E. 53d St., New York, N. Y.

Shadbolt Mfg. Co., 63 Flushing Ave., Brooklyn, N. Y.

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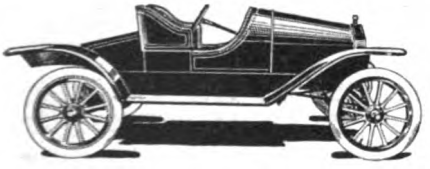

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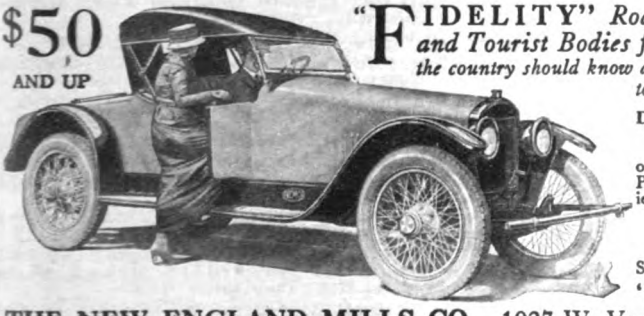

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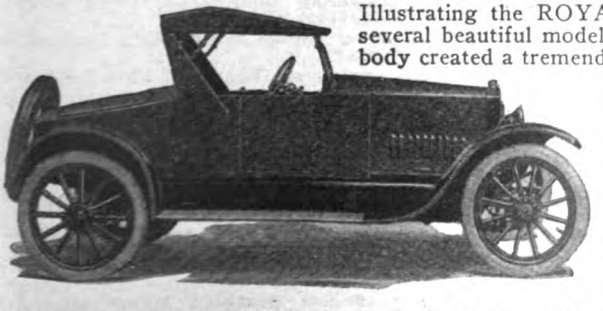

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BODIES, Wood Commercial Car (Continued)

Simplex Mfg. Co., Conneautville, Pa.
Sisman Co., Andrew C., 1221 Beaufait Ave., Detroit, Mich.
Smith Carriage Co., R. J., Lake & Lyell Aves., Rochester, N. Y.
South Bend Spring Wagon & Carriage Co., 210-16 S. St. Joseph St., South Bend, Ind.
Southern Motor Mfg. Assn., Beatty Bldg., Houston, Tex. "Ranger."
Spaulding Mfg. Co., 933 Spring St., Grinnell, Ia.
Springfield Commercial Body Co., 335 Liberty St., Springfield, Mass.
Springfield Harness Co., 55-59 Dwight St., Springfield, Mass.
Standard Auto Top & Body Co., 1333 Race St., Philadelphia, Pa.
Standard Body Co., White Pigeon, Mich.
Standard Commercial Body Corp., 423-31 E. 104th St., New York, N. Y.
Steffen-Van Steenwyk Co., 619 W. Seventh St., Sioux City, Ia.
Stockbridge Body Co., 130 Union St., Springfield, Mass.
Streator Hearse & Body Co., 910 E. La Rue St., Streator, Ill.
Stunkard Bros., 24-26 N. Meridian St., Brazil, Ind.
Tarco—See Tegetmeier & Riepe Co.
Tegetmeier & Riepe Co., 771-73 First Ave., New York, N. Y. "Tarco."
Texas Wagon Works, 4516 Harrisburg Blvd., Houston, Texas.
Three-In-One—See Omaha Body Co.
Timpte Bros., 2300 Walnut St., Denver, Colo.
Trenton Body Co., 1-3 Center Ct., Trenton, N. J.
Trippensee Mfg. Co., 12th St. & Stanley Ave., Detroit, Mich.
Troy Body Co., Crawford St. & Big Four Ry., Troy, O.
Truck Engineering Co., 7031 Broadway, Cleveland, O.
Truck Service Co., 116 F Ave., West, Cedar Rapids, Ia.
Uhlenhaut Bros. Wagon Co., 1322-24 Merchant St., St. Louis, Mo.
Union Wheel Works, 51-55 Stanton St., Newark, N. J.
Unit Mfg. Co., 9 Cedar St., Amesbury, Mass.
Universal Body Co., Chicago St., Jonesville, Mich.
Van Auken Co., South Blvd. & Grand Trunk R. R., Pontiac, Mich.
Walker Carriage Co., Merrimac, Mass.
Waterbury Body Co., Thomaston, Conn.
Waterloo Body Corp., Waterloo, N. Y.
Watkins Commercial Body Corp., 666-72 Genesee St., Buffalo, N. Y
Wentworth & Irwin, 200 Second St., Portland, Ore.
Whitman Agricultural Co., St. Louis, Mo.
Williamson, Sam, 1300 Texas St., El Paso, Texas.
Willoughby Co., Dwyer Ave. & Turner St., Utica, N. Y.
Woodward Mfg. Co., Austin, Tex.
Woonsocket Wagon Mfg. Co., 15 Worrall St., Woonsocket, R. I.
Wright Carriage Body Co., 2430 Third Ave., Moline, Ill.
Wright Co., Thomas, 71-73 Colden St., Jersey City, N. J.
York Carriage Co., Franklin & Hay Sts., York, Pa.
York Body Corp., Linden & Belvidere Aves., York, Pa.

BODIES, Special Dumping

(For other Commercial Bodies—See Bodies, Motor Commercial; also Bodies, Wood Commercial)

American Truck Body Co., Martinsville, Va. "Fontaine."
Anheuser-Busch Co., Ninth & Arsenal Sts., St. Louis, Mo.
Archer Iron Works, 34th Pl. & Western Ave., Chicago, Ill. (See page 147.)
Auglaize Motor Car Co., New Bremen, O.
Auto Truck Steel Body Co., 3028-46 Carroll Ave., Chicago, Ill. "Dailey."
Automatic Dump Car Co., 1300 Ernspeger St., South Bend, Ind. (See page 141.)
Bruder, Lawrence, 211-13 W. Second St., Cincinnati, O.
Charlotte Wagon & Auto Co., Charlotte, N. C.
Columbia Wagon Co., Columbia, Pa. "Jennings."
Columbian Steel Tank Co., 1601-21 W. 12th St., Kansas City, Mo.
Commercial Auto Body Co., 16th & Pine Sts., St. Louis, Mo. "Hi-Grade." (See page 151.)
Dailey—See Auto Truck Steel Body Co.
Eagle Wagon Works, 45 S. Division St., Auburn, N. Y.
Economy Hoist & Body Co., 405 Lexington Ave., New York, N. Y. (Sole Distributors for Providence Body Co., Providence, R. I. (See page 527.)
Excelsior—See Rodenhausen's Excelsior Wagon Works.
Fitz Gibbon & Crisp, Calhoun St. & P. & R. R., Trenton, N. J.
Graves Co., L. C., Springboro, Pa.
Fontaine—See American Truck Body Co.
Hannibal Truckbody Co., 1001 Collier St., Hannibal, Mo.
Heil Co., 1136-40 Montana Ave., Milwaukee, Wis. (See page 147.)
Hi-Grade—See Commercial Auto Body Co.
Interboro Hoist & Body Corp., Ely, William & Henry Sts., Long Island City, N. Y.
Jennings—See Columbia Wagon Co.
K. & J.—See Kilbourne & Jacobs Mfg. Co.
Kilbourne & Jacobs Mfg. Co., Columbus, O. "K. & J." (See page 145.)
Lally Commercial Body Co., Paris St., Everett, Mass.
Lee Loader & Body Co., 2332 S. LaSalle St., Chicago, Ill. (See page 1003.)
Luedinghaus Quality Motor Truck, Broadway, Howard to Mound St., St. Louis, Mo. (See page 41.)
McDermott Body Corp., 123-25 Sixth St., Long Island City, N. Y.
Mayer Wagon Co., 6461 Frankstown Ave., E. E., Pittsburgh, Pa.
Metropolitan Body Co., 430-34 Grand St., Bridgeport, Conn.
Michigan Bridge & Pipe Co., Lansing, Mich. "Yale."
National Dump Body Co., Philadelphia, Pa.
New Ideal Wagon Works, 1345 Park Ave., New York, N. Y.
Patriot Motors Co., Lincoln, Neb.
Press Sons, Jacob, 300 N. Halsted St., Chicago, Ill.
Proctor-Keefe Co., 7741 Dix Ave., Detroit, Mich.
Providence Body Co.—See Economy Body Sales Co.
Randall Steel Dumping Bodies Co., Heap Bldg., Chicago, Ill.
Ranger—See Southern Motor Mfg. Association.
Reedy Auto Truck & Trailer Co., 19 E. Archer St., Tulsa, Okla.

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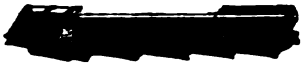
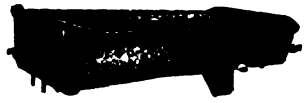
"K & J"

Standardized Motor Truck Bodies For Dump Trucks



Model "K"—For hauling sand, gravel, crushed stone, etc.



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Model "U" Combination Body

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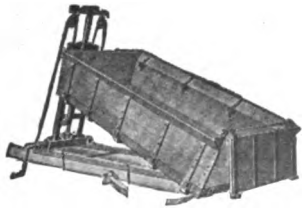
of the granulated materials handled on motor trucks can be handled cheaper on "K & J" standardized bodies.

Model "G"—Garbage Body

Model "KD"—Similar to Model "K" but with double acting tailgate



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BODIES, Special Dumping (Continued)

Rodenhausen's Excelsior Wagon Works, 1435-37 Hutchinson St., Philadelphia, Pa. "Excelsior."

Schaefer Wagon Co., Gustav, 4166-80 Lorain Ave., Cleveland, O.

Shadbolt Mfg. Co., 68 Flushing Ave., Brooklyn, N. Y.

Simplex Mfg. Co., Conneautville, Pa.

Sior & Son, Heinrich, 245-47 Floyd St., Brooklyn, N. Y.

Southern Motor Mfg. Assn., Beatty Bldg., Houston, Tex. "Ranger."

Standard Steel Works, 1722 Tracy Ave., Kansas City, Mo. (See page 147.)

Steffen-Van Steenwyk Co., 619 W. Seventh St., Sioux City, Iowa.

Stewart Iron Works Co., Cincinnati, O.

TEC—See Truck Engineering Co.

Transportation Equipment Co., 1637 Gratiot Ave., Detroit, Mich.

Truck Engineering Co., 7031 Broadway, Cleveland, O. "TEC."

Truck Service Co., 116 F Ave., West, Cedar Rapids, Ia.

Wood Hydraulic Hoist & Body Co., 4196 Bellevue Ave., Detroit, Mich. (See page 501.)

Woonsocket Wagon Mfg. Co., 15 Worrall St., Woonsocket, R. I.

Wright Co., Thomas, 71-73 Colden St., Jersey City, N. J.

Yule—See Michigan Bridge & Pipe Co.

BODIES, SPECIAL DUMPING, FOR FORDS —See Bodies, Automatic Dumping

BODIES, Special Commercial, for Fords

(Including also commercial bodies to fit all truck attachments and convertible bodies of all types)

A.B.C.—See Clippinger & Sons Mfg. Co.

Abingdon Wagon Co., Abingdon, Ill.

Ames Co., F. A., 401 W. Fourth St., Owensboro, Ky. "B.C."

Auto Body Works, Pierce Ave. & Eighth St., Appleton, Wis.

Automobile Body Co., 5911 14th Ave., Detroit, Mich.

Automotive Manufacturers' Associates, 14th & Farnam Sts., Omaha, Nebr. (Sole Representatives for Badger Auto Body Co., Milwaukee, Wis.)

B.C.—See Ames Co.

Babcock Co., H. H., Watertown, N. Y. (See page 133.)

Badger Auto Body Co.—See Automotive Manufacturers' Associates.

Badger Mfg. Co., Eighth & M Sts., (Havelock) Lincoln, Nebr.

Bailey Auto Body & Sales Co., 31st & Olive Sts., St. Louis, Mo.

Barnett Auto Body Co., 430 Golden Gate Ave., San Francisco, Cal.

Bay City Auto Body Co., Center Ave. & Pere Marquette R. R., Bay City, Mich.

Biehls Wagon & Auto Body Works, 31 S. Fifth St., Reading, Pa.

Blount Carriage & Buggy Co., 89 S. Forsythe St., Atlanta, Ga.

Brooklyn Commercial Body Co., E. 35th St & Ave. H, Brooklyn, N. Y.

Brownell & Burt, 10 Washington St., Taunton, Mass.

Butler Mfg. Co., 1324 Grand Ave., Kansas City, Mo.

Cantrell & Bro., J. T., Wall St., Huntington, N. Y.

Champion Wagon Co., Owego, N. Y.

Charlotte Wagon & Auto Co., Charlotte, N. C.

Clark Mfg. Co., J. L., 519 High St., Oshkosh, Wis.

Cleveland Top & Specialty Co., Carnegie & E. 65th Sts., Cleveland, O.

Clippinger & Sons Mfg. Co., A. B., 1100 S. Mill St., Kansas City, Kans. "A.B.C."

Collings Carriage Co., Front & Arch Sts., Camden, N. J.

Columbia Body Co., 45 Selden Ave., Detroit, Mich.

Columbia Wagon Co., Columbia, Pa.

Columbian Steel Tank Co., 1601-21 W. 12th St., Kansas City, Mo.

Columbus Body Co., Columbus, O. (See page 141.)

Commercial Auto Body Co., 16th & Pine Sts., St. Louis, Mo. "Hi-Grade." (See page 151.)

Continental Car Co. of America, 4721 Park Blvd., Louisville, Ky.

Defiance Carriage Co., Defiance, O.

De Kalb Wagon Co., De Kalb, Ill.

Detroit Weatherproof Body Co., 600 S. Saginaw St., Pontiac, Mich.

Eagle Wagon Works, 45 S. Division St., Auburn, N. Y.

Elberg-Keller Body Mfg. Co., 29th & Cherry Sts., Kansas City, Mo.

Erby & Sons Co., Wm., 121-27 W. Grand Ave., Chicago, Ill.

Eureka Co., First St., Rock Falls, Ill.

Express Body Corp., 332 S. Michigan Ave., Chicago, Ill.

Federal Motor Supply Co., 440 S. Dearborn St., Chicago, Ill. (Distributors.) (See page 183.)

Field Body Corp., Owosso, Mich. (See page 141.)

Fitz Gibbon & Crisp, Calhoun St. & P. & R. R. R., Trenton, N. J.

Ford Body Co., 301 N. Green St., Greensboro, N. C.

Gates & Co., 250 W. 54th St., New York, N. Y.

Geneva Wagon Co., Geneva, N. Y.

Graves Co., L. C., Springboro, Pa.

Haberer & Co., Boston St. & C. H. & D. Ry., Cincinnati, O.

Hannibal Truckbody Co., 1001 Collier St., Hannibal, Mo.

Harrison Co., Robert, 324-28 W. First St. (S. Boston), Boston, Mass.

Henney Buggy Branch of Moline Plow Co., Moline, Ill.

Henney & Co., John W., Louis Ave. & Jackson St., Freeport, Ill.

Hercules Buggy Co., Morton Ave., Evansville, Ind.

Hi-Grade—See Commercial Auto Body Co.

Highland Body Mfg. Co., 716 Elmwood Pl., Cincinnati, O.

Hill Pump Valve Co., Belmont & Knox Aves., Chicago, Ill. "Utility."

Hoover Wagon Co., York, Pa.

Hopp Carriage Co., Fourth & Walnut Sts., Mifflinburg, Pa.

Izett Auto Body & Repair Shop, 1432-60 Speer Blvd., Denver, Colo. "Perfection," "Nonxl."

Koenig & Luhrs Wagon Co., 320 S. Sixth St., Quincy, Ill.

Kratzer Carriage Co., 100 S. First St., Des Moines, Ia.

Lamco—See Lehman Mfg. Co.

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Heil's 4 in 1 Bodies can be used for wide variety of purposes. They are furnished with 2 sets of removable sides and double acting tail gate. Upper sides—coal capacity; lower sides—gravel capacity; sides removed—platform body. All bodies tapered 3" wider at rear to allow load to slide out freely.
The Hydro Hoist is simple, compact and direct acting; utilizes all loading space; eliminates pipes, cables, pulleys and rollers, etc.

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The Heil Northwestern Sales Co., St. Paul, Minn.

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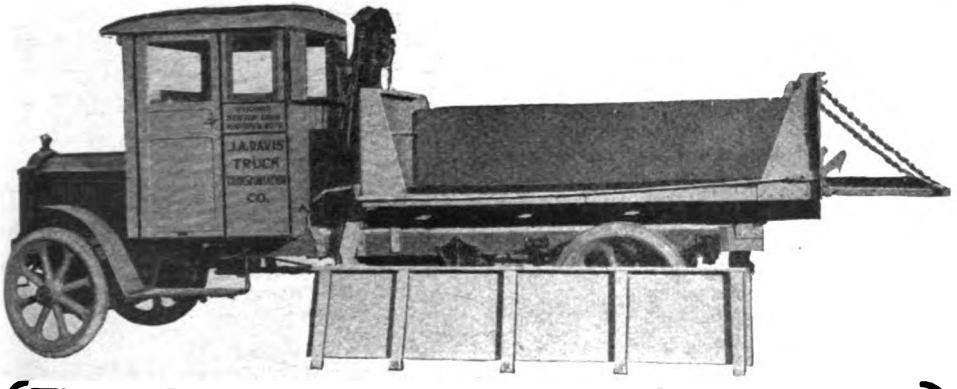
1136-40 Montana Ave., Milwaukee, Wis.

The McKenna Co., Cleveland, Ohio.



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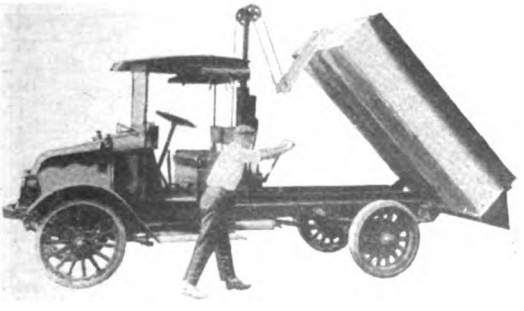

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BODIES, Special Commercial, for Fords (Continued)

Lehman Mfg. Co., 310 Fourth St., Cannelton, Ind. "Lamco." (See page 151.)

Lobes Body Co., 20 N. Railroad Ave., Mt. Vernon, N. Y.

Lowell Auto Body Co., Lowell, Mich.

McKay Carriage Co., Grove City, Pa.

Martin-Parry Corp., W. Market St. & Highland Ave., York, Pa.

Michigan Bridge & Pipe Co., Lansing, Mich. "Yule."

Mifflinburg Body Co., Mifflinburg, Pa. (See page 151.)

Mills-Ellsworth Co., Keokuk, Ia.

Moline Plow Co. (Stephens Motor Works), Moline, Ill.

Monday Co., A. J., 327 Fourth St., Milwaukee, Wis.

Murphy Co., P. J., 19-21 Main St., N. E., Minneapolis, Minn.

Nepessing Mfg. Corp., Lapeer, Mich.

New England Mills Co., 1027 W. Van Buren St., Chicago, Ill. (See page 143.)

Nonxl—See Izett Auto Body & Repair Shop.

Perfection—See Izett Auto Body & Repair Shop.

Proctor-Keefe Co., 7741 Dix Ave., Detroit, Mich.

Randall Steel Dumping Bodies Co., Hearst Bldg., Chicago, Ill.

Ranger—See Southern Motor Mfg. Association.

Reedy Auto Truck & Trailer Co., 19 E. Archer St., Tulsa, Okla.

Shutt, W. H., 154 Ogden St., Newark, N. J.

Southern Motor Mfg. Assn., Beatty Bldg., Houston, Tex. "Ranger."

Standard Commercial Body Corp., 423-31 E. 104th St., New York, N. Y.

Spaulding Mfg. Co., 983 Spring St., Grinnell, Ia.

Springfield Commercial Body Co., 385 Liberty St., Springfield, Mass.

Standard Body Co., 934 Lowe St., Appleton, Wis.

Steffen-Van Steenwyk Co., 619 W. Seventh St., Sioux City, Iowa. "Woodbury."

Stevens Implement Co., Sidney, Ogden, Utah.

Stover Steel Tank & Mfg. Co., Hancock Ave., Freeport, Ill.

Stunkard Bros., 24-26 N. Meridian St., Brazil, Ind.

Texas Wagon Works, 4516 Harrisburg Blvd., Houston, Tex.

Truck Engineering Co., 7031 Broadway, Cleveland, O.

Utility—See Hill Pump Valve Co.

Waterloo Body Corp., Waterloo, N. Y.

Watkins Commercial Body Corp., 666-72 Genesee St., Buffalo, N. Y.

Wayne Works, 16th & North F Sts., Richmond, Ind.

Whetstone & Co., John H., Court St., Lapeer, Mich.

Whitfield & Son, W. H., Penn Yan, N. Y.

Williams Wagon Works, Third St., Macon, Ga.

Woodbury—See Steffen-Van Steenwyk Co.

Woonsocket Wagon Mfg. Co., 15 Worrall St., Woonsocket, R. I.

York Body Corp., Linden & Belvidere Aves., York, Pa.

York Carriage Co., Franklin & Hay Sts., York, Pa.

Yule—See Michigan Bridge & Pipe Co.

BODIES, Special Passenger, for Fords

(Including runabout, touring car, special speedster or racing bodies and closed bodies)

A-S-P—See Allied Steel Products Co.

Allied Steel Products Co., 7 Walnut St., Aurora, Ill. "A-S-P."

Ames Co., F. A., 401 W. Fourth St., Owensboro, Ky. "Amesbilt."

Amesbilt—See Ames Co.

Aristocrat—See Dunham Co.

Auto Remodeling Co., 1503 S. Michigan Ave., Chicago, Ill. "Remo."

Autowa—See Ottawa Body Co.

Blue Streak—See Izett Auto Body & Repair Shop.

Breeden & Cole, 1245 Market St., San Francisco, Cal.

Briggs Mfg. Co., 55 Leuschner Ave., Detroit, Mich.

Champion Racing Body Co., 1920 S. Wabash Ave., Chicago, Ill.

Charlotte Wagon & Auto Co., Charlotte, N. C.

Chauncy Body Corp., 2601 Archer Ave., Chicago, Ill. (See page 131.)

Columbia Body Co., 45 Selden Ave., Detroit, Mich.

Danielson Tool Co., Fulton St., Wausau, Wis.

Dayton Metal Body Co., Pennsylvania Ave. & Kiser St., Dayton, O.

Dunham Co., Thos., Aurora, Ill. "Patrician," "Symphony," "Aristocrat," "Tuxedo." (See page 167.)

Elberg-Keller Body Mfg. Co., 29th & Cherry Sts., Kansas City, Mo.

Empire Auto Specialty Co., 1420-24 Blue Island Ave., Chicago, Ill.

Erby & Sons Co., Wm., 121-27 W. Grand Ave., Chicago, Ill.

Federal Motor Supply Co., 440 S. Dearborn St., Chicago, Ill. (Distributors.) (See page 183.)

Fidelity—See New England Mills Co.

Fitz Gibbon & Crisp, Calhoun St. & P. & R. R. R., Trenton, N. J.

Gates & Co., 250 W. 54th St., New York, N. Y.

Izett Auto Body & Repair Shop, 1432-60 Speer Blvd., Denver, Colo. "Blue Streak."

Kelsey Wheel Co., Detroit, Mich. (See page 1063.)

Lamco—See Lehman Mfg. Co.

Lehman Mfg. Co., 310 Fourth St., Cannelton, Ind. "Lamco." (See page 151.)

Mac Innes Bros., 120-22 22nd St., Toledo, O.

Morton & Brett, 311-15 E. 23d St., Indianapolis, Ind.

National Body Mfg. Co., 810 17th Ave., N., Nashville, Tenn.

New England Mills Co., 1027 W. Van Buren St., Chicago, Ill. "Fidelity." (See page 143.)

New Star Auto Metal Works, 1718-20 S. Wabash Ave., Chicago, Ill.

Ottawa Body Co., Ottawa, Ill. "Autowa." (See page 149.)

Paco Mfg. Co., Franklin & Seventh Sts., Peoria, Ill.

Patrician—See Dunham Co.

Penn Square Body Co., 5405 Euclid Ave., Cleveland, O.

Pfeiffer Auto & Carriage Works, Wm., 25th Ave. & Leavenworth St., Omaha, Neb.

Remo—See Auto Remodeling Co.

Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "Speed-King." (See pages 129, 151, 325 and 327.)

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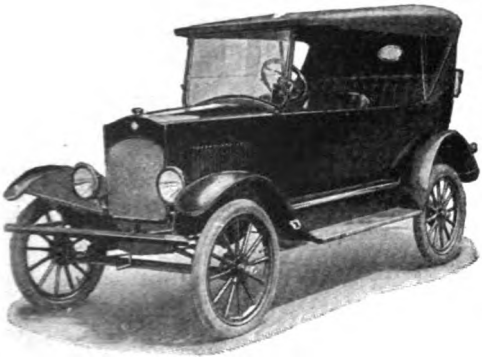
THE AUTOWA

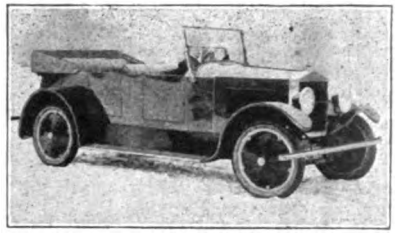
Five Passenger Body for FORD Chassis



Body is of four door construction, six inches longer than standard. Instrument board in cowl and tank under front seat. Equipped as follows: One man top with plate glass window. Slanting two-piece windshield. Aluminum bound running boards, straight line hood and full crown fenders. Front and rear bumpers. Tire carrier for casings. Special Honey Comb Radiator giving 20% more cooling capacity. Price complete.....$297.50

The Ottawa Body Company

OTTAWA - - ILL.



SPECIFICATIONS

120 INCH WHEELBASE
Five passenger touring car body
Chassis extension parts
Rolled Crown, one piece heavy steel fenders
Polished nickel-silver radiator shell
Large storage space in rear of body
Seat cushions and backs adjustable to form bed for sleeping purposes
Discs for outside and inside of wheels
Finished in medium gray with black fenders

F. O. B. Cars, Factory
Price Standard Finish, $500.00
All You Supply Is a Ford Chassis

The Universal Body Corporation

Mishawaka, Ind.

CLOSE-TITE

FOR FORDS

Close-Tite showing operation of curtains

The CLOSE-TITE for Fords shown in cut is a practical, common sense attachment. Not a whole top, but an attachment that is installed on your regular Ford top. It will instantly convert your open car to a closed car. When closed it is proof against all weather conditions, making it possible for Ford owners to enjoy the comforts of the expensive cars at only a nominal cost.

The attachment installed weighs only 37½ pounds.

Curtain Construction

The curtains are 24 inches in width, being made almost entirely of Pyraline, insuring the greatest amount of light in the car possible, are constructed on flexible steel frames, which gives them a rigidity so necessary to prevent displacement by the action of the wind. The curtains travel in pressed steel channels, extending from the body of the car upward to the center of the top. They are operated in much the same manner as a curtain to an ordinary roll top desk.

LIST PRICE { **Touring Car** - - - - - **$48.00**
Roadster - - - - - - **33.00**

Manufacturers of

Complete Metal Truck and Passenger Car Bodies

LONGDIN-BRUGGER CO., Inc. Second and Macy Sts., Fond du Lac, Wis.

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BODIES, Special Passenger, for Fords (Continued)

Royal Auto Body Co., 3727-37 Cottage Grove Ave., Chicago, Ill. (See page 143.)

Selden Mfg. Co., 41-61 Selden Ave., Detroit, Mich.

Speed-King—See Roose Mfg. Co.

Speedway Engineering Co., 910 S. Illinois St., Indianapolis, Ind. (See page 1133.)

Stanco—See Universal Body Corp.

Symphony—See Dunham Co.

Tailor-Made Body Co., 1467 S. Michigan Ave., Chicago, Ill.

Tuxedo—See Dunham Co.

Universal Auto Products Co., 3727 Cottage Grove Ave., Chicago, Ill.

Universal Body Corp., Mishawaka, Ind. "Stanco." (See page 149.)

Wabash Auto Radiator Mfg. Co., 1117-23 S. Wabash Ave., Chicago, Ill.

Williams Wagon Works, Third St., Macon, Ga.

BODY ANTI-SQUEAK—See Lining, Body or Frame

BODY BUILDERS' CLAMPS—See Clamps, Woodworkers

BODY GLASS—See Glass, Polished Plate

BODY HANDLING TRUCKS—See Trucks, Body Handling

BODY HOISTS—See Hoists, Truck Body

BODY IRONS—See Irons, Body

BODY LINING—See Lining, Body or Frame

BODY PADDING—See Lining, Body or Frame

BODY PARTS—See Parts, Wood Automobile Body

BODY POLISH—See Polishes, Automobile Body

BODY RUBBING MACHINES—See Machines, Body Rubbing

BODY STOCK—See Lumber, Automobile; also Aluminum, Sheet; also Steel, Sheet

BOILER ALARMS—See Columns, Water

BOILER COLUMNS—See Columns, Water

BOILER FEED PUMPS—See Pumps, Boiler Feed

BOILER FEED REGULATORS—See Regulators, Water Level

BOILER INJECTORS—See Injectors, Boiler Feeding

BOILER TUBE EXPANDERS—See Expanders, Boiler Tube

BOILER WATER GAGES — See Gages, Boiler

BOILERS, Automobile Steam

Stanley Motor Carriage Co., Newton, Mass.

BOILERS, Steam Engine Cleaning

(For cleaning engine, transmission or axle parts by steam)

Eureka—See Lattner Mfg. Co.

Lattner Mfg. Co., P. M., 515 F Ave. W., Cedar Rapids, Iowa. "Eureka."

BOLT AND SCREW CASES—See Cases, Bolt

BOLT CLIPPERS—See Clippers, Bolt and Rivet

BOLT EXTRACTORS—See Extractors, Stud Bolt

BOLT LUBRICATORS—See Lubricators, Spring and Shackle Bolt

BOLT WRENCHES—See Wrenches, Nut and Bolt

BOLTS, Airplane Eye

Automatic Products Co., 1145 W. Grand Blvd., Detroit, Mich. (See page 835.)

Barcalo Mfg. Co., 225 Louisiana St., Buffalo, N. Y.

Metal Parts Mfg. Co., 1034 E. 152d St., Cleveland, O.

BOLTS, Aircraft Propeller Hub

Steel Products Co., Cleveland, O. (See page 153.)

BOLTS, CAP—See Screws, Cap and Set

BOLTS, CARRIAGE—See Bolts, Machine and Carriage

BOLTS, DEMOUNTABLE RIM—See Bolts, Special Demountable Rim

BOLTS, ENGINE for Fords — See Bolts, Special for Fords

BOLTS, EYE—See Bolts, Airplane Eye

BOLTS, Machine and Carriage

Aetna Screw & Bolt Co., 104 S. Clinton St., Chicago, Ill.

Boss Nut Co., 1732-54 N. Kolmar Ave., Chicago, Ill.

Clark Bros. Bolt Co., Milldale, Conn.

Columbus Bolt Works Co., Columbus, O. (See page 155.)

Eagle—See Skelly Bolt Co.

Falls Rivet Co., Kent, O.

Foster Bolt & Nut Mfg. Co., 3556 E. 72d St., Cleveland, O. "Perfection."

Gordon-Little Co., 122-24 N. Senate Ave., Indianapolis, Ind.

Graham Nut Co., 1317-19 W. Carson St., Pittsburg, Pa.

Haskell Mfg. Co., Wm. H., 24 Commerce St., Pawtucket, R. I.

Haydon, A. & M., 304 N. 22d St., Philadelphia, Pa.

Kirk-Latty Mfg. Co., 1971 W. 85th St., Cleveland, O.

Lamson & Sessions Co., 2133 Scranton Rd., Cleveland, O.

Lanz & Sons, Mathew, 2907 Carson St., Pittsburg, Pa.

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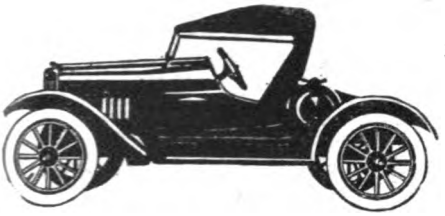
SPEED-KING SPEEDSTER BODY FOR FORDS



We can furnish this body with or without top and windshield, primed or fully finished in Black, Auto Blue, Brewster Green, Stutz Red or Battleship Gray.

$42.50 and Up

Dealers and Jobbers—"The Speed-King" never fails to attract attention in any kind of company. Everybody sold brings other orders. Fits any model T Ford and permits use of old radiator, fenders, running Boards, Splash Guards, etc.

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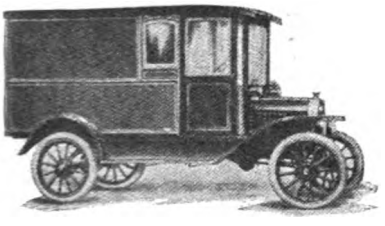

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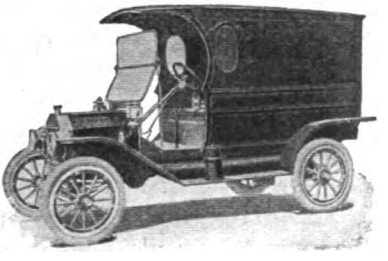
Commercial Bodies for Ford and other Chasses



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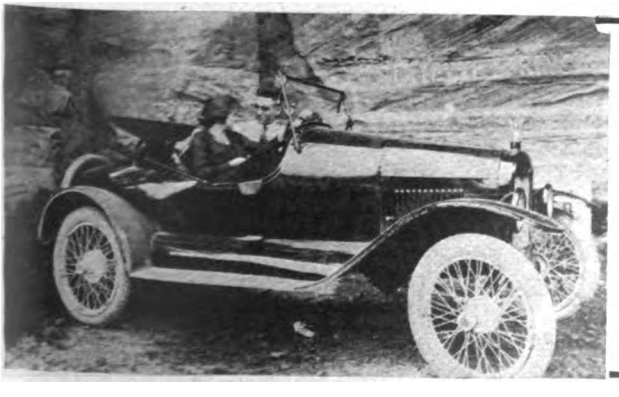
Mifflinburg, Pa.



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BOLTS, Machine and Carriage (Continued)

Michigan Bolt & Nut Works, ft. Meldrume Ave., Detroit, Mich.
National Lock Co., Rockford, Ill. (See page 843.)
National Screw & Tack Co., 2440 E. 75th St., Cleveland, O.
Oliver Iron & Steel Co., Tenth & Muriel Sts., Pittsburgh, Pa.
Pawtucket Mfg. Co., 327 Pine St., Pawtucket, R. I.
Perfection—See Foster Bolt & Nut Mfg. Co.
Pittsburgh Screw & Bolt Co., Preble Ave. (N. S.), Pittsburgh, Pa.
Republic Iron & Steel Co., Republic Bldg., Youngstown, O.
Rhode Island Tool Co., Providence, R. I.
Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.
St. Louis Screw Co., Clarence & Bulwer Aves., St. Louis, Mo.
Skelly Bolt Co., Thomas P., 24th & Callowhill Sts., Philadelphia, Pa. "Eagle."
Upson Nut Co., Scranton Rd., Cleveland, O.

BOLTS, PROPELLER HUB—See Bolts, Aircraft Propeller Hub

BOLTS, SHACKLE—See Bolts, Spring Shackle

BOLTS, Special Demountable Rim

Bayne Mfg. Co., Bushnell, Ill. (See page 725.)
Hil-Ko Rim Lock Co., 4722 Dilman Blvd., St. Louis, Mo.
Jiffy Rim Lock Co., Scarrit Arcade Bldg., Kansas City, Mo.

BOLTS, Special, for Fords

Acme Mfg. Co., Boonton, N. J.
Ban-Rov & Co., 2230 S. Wood St., Chicago, Ill.
Benford Auto Products, Mt. Vernon, N. Y.
Bridgers Co., J. D., Palmetto St. & Railroad Ave., Florence, S. C.
Cincinnati Screw Co., Twightwee, O. (See page 701.)
Dunham Co., Thos., Aurora, Ill. (See page 167.)
Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.
Metzger Welding Co., 1625 Blue Rock St., Cincinnati, O. (See page 1151.)
Simmons Mfg. Co., 3405-11 Perkins Ave., Cleveland, O.
U. S. Metal Goods Co., 5211 Euclid Ave., Cleveland, O. (See page 685.)

BOLTS, Spring Shackle

(Complete Bolt with Oil or Grease Cup attached)

Bowen Products Corp., Auburn, N. Y. "Empress." (See page 331.)
Bowen Products Corp., 2760 W. Warren Ave., Detroit, Mich.
Brewer Tichener Corp., Cortland, N. Y. (See page 567.)
Brown Co., 1071-73 Clinton St., Syracuse, N. Y.
Clark Bros. Bolt Co., Milldale, Conn.
Columbus Bolt Works Co., Columbus, O. (See page 155.)
Empress—See Bowen Products Corp.
Ferry Cap & Set Screw Co., Scranton Rd., Cleveland, O. (See page 837.)
Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.
Fostoria Screw Corp., E. Railroad St., Fostoria, O.
Hyklas—See Parts Service Co.
Metzger Welding Co., 1625 Blue Rock St., Cincinnati, O. (See page 1159.)
Parts Service Co., 9307-11 Hough Ave., Cleveland, O. "Hyklas." (See page 1207.)
Phoenix Mfg. Co., Loraine & Grand River Aves., Detroit, Mich. (See page 1127.)
Steel Products Co., Cleveland, O. (See page 153.)
Upson Nut Co., Unionville, Conn.

BOLTS, STEP—See Bolts, Machine and Carriage

BOLTS, Stove and Tire

American Screw Co., 21 Stevens St., Providence, R. I.
Atlas Bolt & Screw Co., Cleveland, O. (See page 845.)
Champion Mfg. Co., 74th St. & Kimbark Ave., Chicago, Ill. (See page 439.)
Clark Bros. Bolt Co., Milldale, Conn.
Columbus Bolt Works Co., Columbus, O. (See page 155.)
Corbin Screw Corp., High St., New Britain, Conn.
Falls Rivet Co., Kent, O.
Foster Bolt & Nut Mfg. Co., 3556 E. 72d St., Cleveland, O. "Perfection."
Gordon-Little Co., 122-24 N. Senate Ave., Indianapolis, Ind.
Kirk-Latty Mfg. Co., 1971 W. 85th St., Cleveland, O.
Lamson & Sessions Co., 2188 Scranton Rd., Cleveland, O.
National Lock Co., Rockford, Ill. (See page 843.)
National Screw & Tack Co., 2440 E. 75th St., Cleveland, O.
Perfection—See Foster Bolt & Nut Mfg. Co.
Reed & Prince Mfg. Co., Duncan Ave., Worcester, Mass.
Russell & Erwin Mfg. Co., New Britain, Conn.
Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.
Upson Nut Co., Scranton Rd., Cleveland, O.

BOLTS, TIRE—See Bolts, Stove and Tire

BOLTS and NUTS, Special Aircraft

Erie Specialty Co., Erie, Pa.

BONNETS, ENGINE—See Hoods, Engine

BONNETS, MOTOR—See Hoods, Engine

BONNETS, UNDER—See Pans, Dust

BOOKS, Accounting and Cost Systems

Accurate System & Manifolding Co., 403 Broome St., New York, N. Y.
Comfort Printing Specialty Co., 107 N. Eighth St., St. Louis, Mo.
Gregory, Mayer & Thom Co., 19-21 Cadillac Sq., Detroit, Mich. (See page 155.)
Harton & Co., Thos. J., 212 Church St., New York, N. Y.
Holmes & Co., E. J., 110 S. Dearborn St., Chicago, Ill. (See page 1001.)
Tallman, Robbins & Co., 316 W. Superior St., Chicago, Ill.

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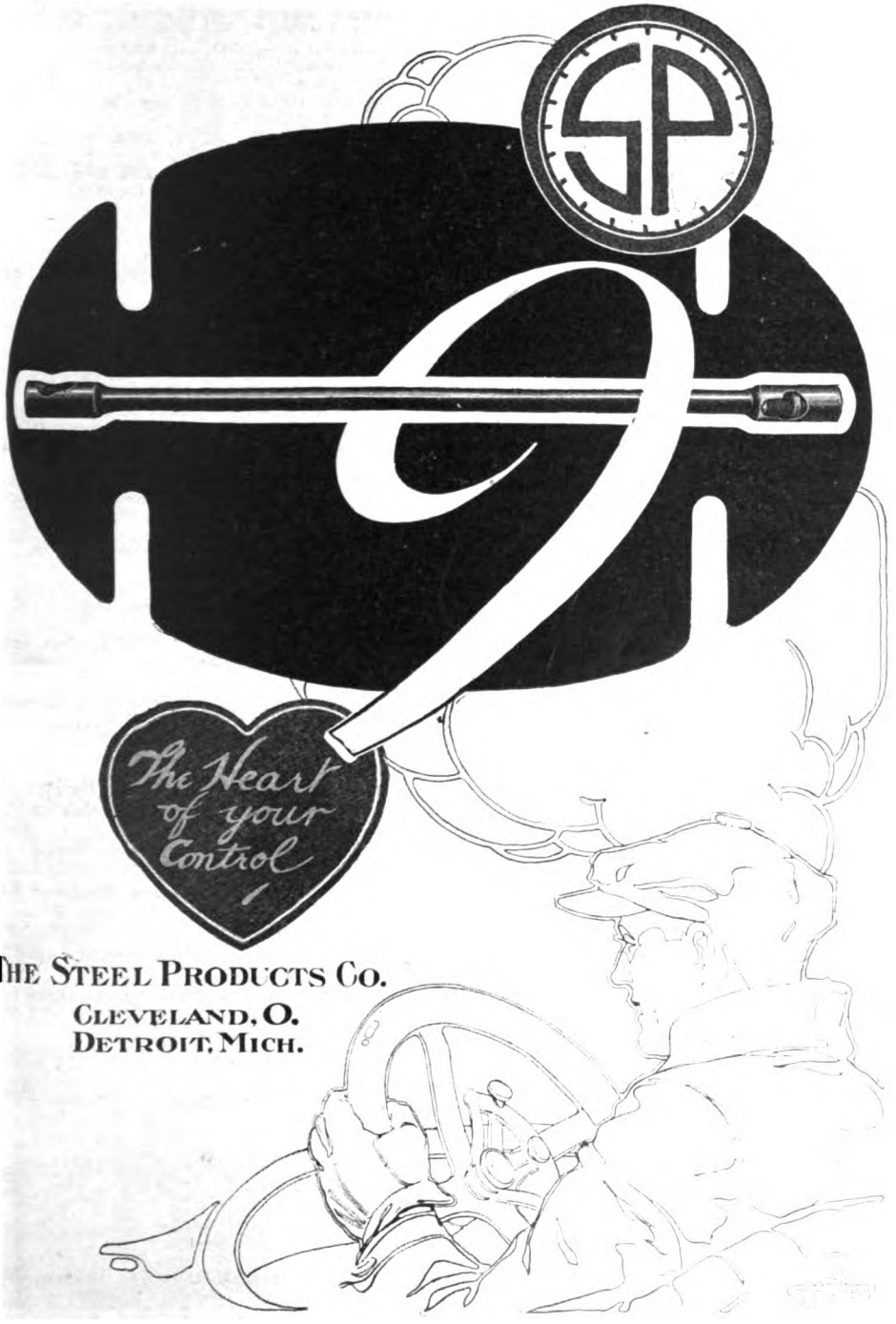

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BOOKS and PERIODICALS

(Covering only Books and Periodicals advertised in this publication)

Automotive Publishing Co., 442 S. Dearborn St., Chicago, Ill. (See page 155.)

Chicago Tribune, Chicago, Ill. (See page 353.)

City Editor Publishing Co., 13-21 Park Row, New York, N. Y. (See page 85.)

Colliers, 416 W. 13th St., New York, N. Y. (See page 1099.)

Leslie's Weekly, New York, N. Y. (See page 625.)

Michigan State Auto School, 3729 W. Woodward Ave., Detroit, Mich. (See page 399.)

Shaw Co., A. W., Dept. A. T. D., Wabash Ave. & Madison St., Chicago, Ill. (See page 85.)

Service Engineering Co., 615 Commercial St., San Francisco, Cal. (See page 1115.)

Tires, 373 Fourth Ave., New York, N. Y. (See page 59.)

Vanity Fair, Dept. P, 19 W. 44th St., New York, N. Y. (See page 61.)

BOOSTERS, BATTERY—See Rectifiers, Alternating Current

BOOTS, JOINT — See Boots, Steering Knuckle

BOOTS, Motorists' Over

(Fur or felt boots to wear over regular shoe when motoring in cold weather)

Putnam & Co., A. H., 154 Maple St., Danvers, Mass.

BOOTS, Steering Knuckle and Joint

(Leather, Oilcloth and Fabric Covers for enclosing Steering Connections and Universal Joints)

Allen Auto Specialty Co., 16 W. 61st St., New York, N. Y. (See page 323.)

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 321.)

Auburn Leather Goods Co., 3 Miller St., Auburn, N. Y.

Avey Leather Goods Mfg. Co., 904-10 Evans St., Cincinnati, O.

B. E. Mfg. Co., 18 W. 18th St., New York, N. Y. "Bemco." (See page 321.)

Bailey-Fitwell Co., 1316 S. Grand Ave., Los Angeles, Cal.

Bemco—See B. E. Mfg. Co.

Campbell—See Perkins-Campbell Co.

Carter Co., George R., Connersville, Ind.

Chicago Rawhide Mfg. Co., 1301 Elston Ave., Chicago, Ill.

Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.

Detroit Leather Works, 863 E. Lafayette Blvd., Detroit, Mich. (See page 125.)

Economy Stay Co., Jefferson City, Mo.

Gilbert Mfg. Co., 353 York St., New Haven, Conn.

Hager & Son, Chas., 1926 Broadway, New York, N. Y.

Hide Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind. (See page 121.)

Hunt Co., Henry C., 261 Franklin St., Boston, Mass. (See page 117.)

Leather Parts Co., 1619-21 Prospect St., Indianapolis, Ind.

Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 321.)

Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. "Campbell." (See page 317.)

Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.

Stevens & Bro., A. A., 1234 Wabash Ave., Chicago, Ill.

Sutherland Co., F. L., 139 Beaubien St., Detroit, Mich. (See page 803.)

BOOTS, Steering Knuckle, for Fords

(Leather, Oilcloth and Fabric Covers for enclosing Steering Connections)

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 321.)

Campbell—See Perkins-Campbell Co.

Detroit Leather Works, 863 E. Lafayette Blvd., Detroit, Mich. (See page 125.)

Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 321.)

Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. "Campbell." (See page 317.)

BOOTS, TIRE REPAIR—See Sleeves, Tire Repair

BOOTS, TOP—See Covers, Top

BOOTS, UNIVERSAL JOINT—See Boots, Steering Knuckle

BORERS, AIRCRAFT PROPELLER HUB—See Machines, Aircraft Propeller Hub Boring

BORING BARS—See Bars, Boring; also Tools, Portable Cylinder Reboring

BORING HEADS—See Heads, Boring

BORING MACHINES—See Machines, Borings; also Machines, Cylinder Reboring; also Machines, Aircraft Propeller Hub Boring; also Machines, Wood Boring

BORING MILL CHUCKS—See Chucks, Boring Mill

BOTTLES, Vacuum

Bailey-Fitwell Co., 1318 S. Grand Ave., Los Angeles, Cal.

Ferrostat—See Stanley Insulating Co.

Icy-Hot Bottle Co., Second & Elm Sts., Cincinnati, O.

Stanley Insulating Co., 43 Exchange Pl., New York, N. Y. "Ferrostat."

BOUQUET HOLDERS—See Holders, Bouquet

BOW CLAMPS—See Holders, Top

BOW CLAMPS FOR FORDS—See Clamps, Top Bow

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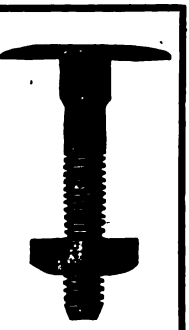

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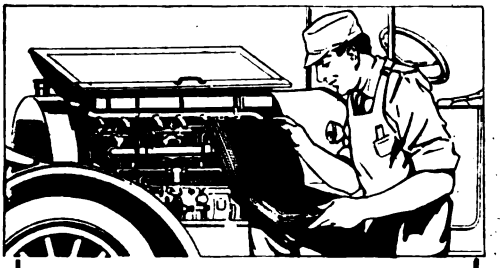

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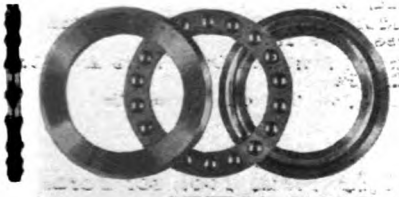
AETNA BALL BEARINGS



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BOW DRESSING MACHINES—See Machines, Top Bow Dressing

BOW HOLDERS—See Holders, Top

BOW RESTS—See Rests, Bow

BOW SEPARATORS—See Separators, Bow

BOW SOCKETS—See Sockets, Bow

BOWS, Top

Acme—See Starr, D. H.
Brown & Co., S. N., 111 Commercial St., Dayton, O.
Campbell & Dann Mfg. Co., Tullahoma, Tenn.
Conestoga Bending Works, 545 N. Market St., Lancaster, Pa.
Dann Bros. & Co., 84 Franklin St., New Haven, Conn.
Delphos Bending Co., 905 S. Main St., Delphos, O.
Hanover Bending & Mfg. Co., Factory St., Hanover, Pa.
Lebzelter & Son Co., Philip, 241 N. Queen St., Lancaster, Pa.
Mengel Co., Louisville, Ky.
Milliken, Geo. W., Muncie, Ind.
Mossman, Yarnelle & Co., Pearl St., Fort Wayne, Ind.
Shepard & Sons, H. G., James & River Sts., New Haven, Conn.
Skeens Empire Bending Works, 114 S. Christian St., Lancaster, Pa.
Starr, D. H., Highland, N. Y. "Acme."
Steelclad Auto Bow Co., Holland, Mich.
Union Bow Co., 725-35 Superior Ave., N. W., Cleveland, O.
Wayne Steering Wheel & Bow Co., Wayne, Mich.
Wheel & Wood Bending Co., 141 John St., Bridgeport, Conn.

BOWS, TOP CONVERTING—See Converters, Top

BOX LOCKS—See Locks, Cabinet and Pad; also Catches, Spring

BOX PROTECTORS FOR FORDS—See Protectors, Coil Box

BOXES, BATTERY—See Boxes, Metal Battery; also Boxes, Wood Battery; also Boxes, Motorcycle Metal Battery

BOXES, BATTERY, FOR FORDS—See Boxes, Tool

BOXES, COIL—See Boxes, Spark Coil

BOXES, CURB—See Boxes, Standard and Curb

BOXES, HOSE—See Boxes, Standard and Curb

BOXES, LUNCH—See Hampers, Touring

BOXES, Metal Battery

A. B. & B. Sheet Metal Works, 3300-02 Fond du Lac Ave., Milwaukee, Wis.
Asch and Co., Inc., 16-24 W. 61st St., New York, N.Y. (New York and New England Distributors for Standard Boxes.) (See page 275.)
Corcoran-Victor Co., 712 Reading Rd., Cincinnati, O. "Victor."
Cornwall Mfg. Co., Cleveland, O. (See page 951.)
Detroit Auto Specialty Co., 6209 Greenwood Ave., Detroit, Mich.
Globe Machine & Stamping Co., 1200-50 W. 76th St., Cleveland, O. (See page 1049.)
Hayes Mfg. Co., 4525 Maybury Grand Ave., Detroit, Mich.
Kirk & Blum, 2846 Spring Grove Ave., Cincinnati, O.
Mertz Mfg. Co., John, Water & Decatur Sts., Sandusky, O.
Mitchell & Son, G. F., 6501 Cedar Ave., Cleveland, O.
Morrison & Sons, F., 1330 W. 11th St., Cleveland, O. (See page 951.)
Murray Mfg. Co., J. W., 571 Clay Ave., Detroit, Mich.
Pandolfo Mfg. Co., St. Cloud, Minn. (See page 157.)
Samson Battery Mfg. Co., Fort Wayne, Ind.
Standard Steel Box Co., Villars Ave., Bridgeville, Pa.
Victor—See Corcoran-Victor Co.

BOXES, Metal Tool

(For Tool Bags—See Bags, Tool)

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (New York and New England Distributors for Standard Boxes.) (See page 275.)
Corcoran-Victor Co., 712 Reading Rd., Cincinnati, O. "Victor."
Cornwall Mfg. Co., Cleveland, O. (See page 951.)
Derby Coppersmithing & Sheet Metal Contracting Co., First & Carolina Sts., Derby, Conn.
Detroit Auto Specialty Co., 6209 Greenwood Ave., Detroit, Mich.
Dow Wire & Iron Works, Louisville, Ky. (See page 157.)
Gem Stamped Steel Co., 16 Beach St., Everett, Mass.
Globe Machine & Stamping Co., 1200-50 W. 76th St., Cleveland, O. (See page 1049.)
Gray Specialty Co., 148 Avon Ave., Newark, N. J.
Hayes Mfg. Co., 4525 Maybury Grand Ave., Detroit, Mich.
Lupton's Sons Co., David, Allegheny & Tulip Sts., Philadelphia, Pa.
Michigan Crown Fender Co., N. Huron St., Ypsilanti, Mich.
Mitchell & Sons, G. F., 6501 Cedar Ave., Cleveland, O.
Pandolfo Mfg. Co., St. Cloud, Minn. (See page 157.)
Standard Steel Box Co., Villars Ave., Bridgeville, Pa.
Victor—See Corcoran-Victor Co.

BOXES, Metal Tool, for Fords

Atlas Mfg. Co., W. Central Ave., Orlando, Fla.
Corcoran Mfg. Co., Section & Foraker Aves., (Norwood), Cincinnati, O. "Peerless."

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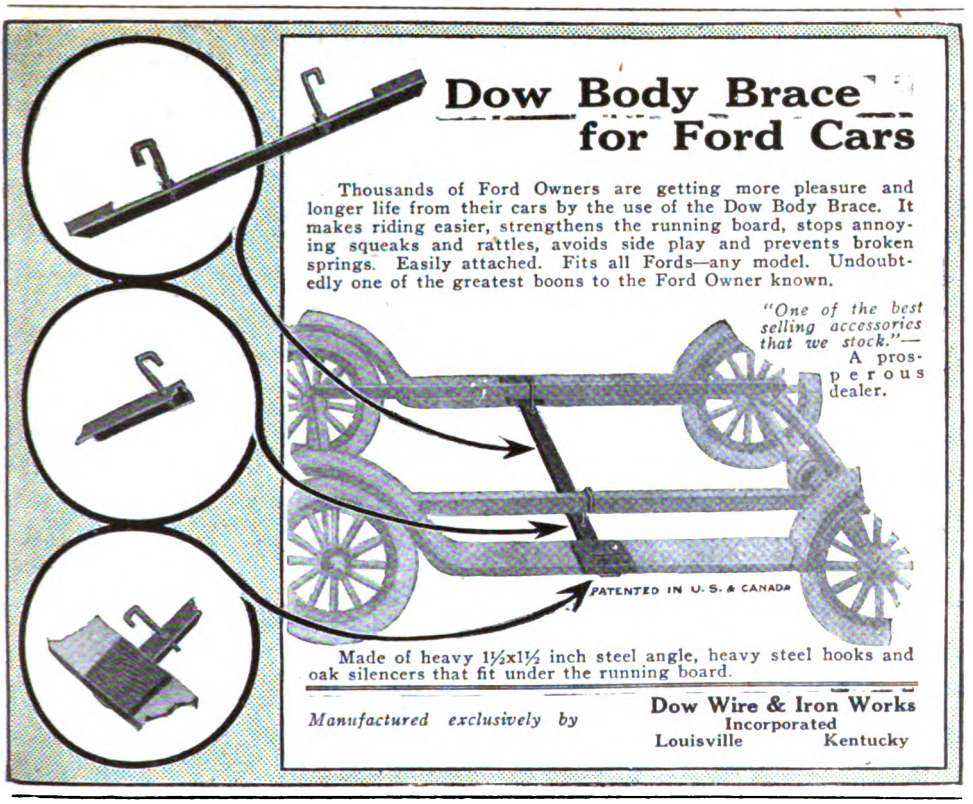

AUTO— METAL
CESSORIES SPECIALTIES

METAL PRESSED
STAMPINGS STEEL PARTS

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BOXES, Metal Tool, for Fords (Continued)

Globe Machine & Stamping Co., 1200-50 W. 76th St., Cleveland, O. (See page 1049.)

Hayes Mfg. Co., 4430 Maybury Grand Ave., Detroit, Mich.

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

Peerless—See Corcoran Mfg. Co.

BOXES, Motor Boat Stuffing

Columbian Bronze Corp., 522 Fifth Ave., New York, N. Y.

Eisenbrandt, F. B., Light St., Baltimore, Md.

Michigan Wheel Co., 1140-48 Monroe Ave., N. W., Grand Rapids, Mich.

Monarch Valve Co., 112 Front St., Brooklyn, N. Y.

Upson-Walton Co., 1310 W. 11th St., Cleveland, O. (See page 1105.)

Wilcox-Crittenden & Co., 2 S. Main St., Middletown, Conn.

BOXES, Motor Boat Underwater Exhaust

(See also Mufflers)

Michigan Wheel Co., 1140-48 Monroe Ave., Grand Rapids, Mich.

BOXES, Motorcycle Metal Battery

International Stamping Co., 400 N. Leavitt St., Chicago, Ill. (See page 1103.)

BOXES, Motorcycle Metal Tool

International Stamping Co., 400 N. Leavitt St., Chicago, Ill. (See page 1103.)

BOXES, Sand

(For attaching to car for sanding slippery roads to prevent skidding)

Surface Grip Corp., 4 W. 21st St., Baltimore, Md.

BOXES, Sheet Metal Tote

(Shop Boxes and Barrels)

Acme Sheet Metal & Mfg. Co., 2343 Lakeside Ave., Cleveland, O.

All-Steel-Equip Co., 150 John St., Aurora, Ill.

Cleveland Wire Spring Co., 1281 E. 38th St., Cleveland, O.

Durlach Can & Iron Works, 234 Bridge St., Brooklyn, N. Y.

Hart & Hutchinson Co., New Britain, Conn.

Hetts Co., Dime Bank Bldg., Detroit, Mich.

Kilbourne & Jacobs Mfg. Co., Columbus, O. (See page 145.)

Kirk & Blum, 2846 Spring Grove Ave., Cincinnati, O.

Leetonia Boiler Co., Leetonia, O.

Lupton's Sons Co., David, Allegheny & Tulip Sts., Philadelphia, Pa.

Lyon Metallic Mfg. Co., Montgomery St., Aurora, Ill.

Manufacturing, Equipment & Engineering Co., Framingham, Mass. "Mecco."

Mecco—See Manufacturing, Equipment & Engineering Co.

N. B.—See New Britain Machine Co.

New Britain Machine Co., Chestnut St., New Britain, Conn. "N. B."

Ohio Mfg. Co., Painesville, O.

Pressed Steel Tank Co., 58th & Greenfield Aves., Milwaukee, Wis.

Scaife & Sons Co., Wm. B., Fifth Ave. & Wood St., Pittsburgh, Pa.

Sterling Wheelbarrow Co., 64th & Pullen Aves., Milwaukee, Wis.

BOXES, SPARE LAMP BULB—See Cases, Extra Lamp Bulb

BOXES, Spark Coil

Churchill Cabinet Co., 2119 Churchill St., Chicago, Ill.

Standard Cabinet Mfg. Co., E. Canal St., Peru, Ind.

West Division, F. M.—The New England Box Co., 225 Liberty St., Springfield, Mass.

BOXES, SPRING OILING—See Cups, Spring Leaf Lubricating

BOXES, Standard and Curb

(For installing at curb for free air service)

Auto Camp Stove Co., 1420 Cass St., Fort Wayne, Ind.

Devices Industry, 116 Ohio St., Oshkosh, Wis. "Monahan."

Eco—See Western Mfg. Co.

Hale Electric & Engineering Co., Cleveland, O. (See page 159.)

Lipman Pump Works, 100 Shirland Ave., Beloit, Wis.

Midvale Machine Works—See Wesco Supply Co.

Monahan—See Devices Industry.

Romort Mfg. Co.—See Zinke Co.

Wayne Oil Tank & Pump Co., 703 Canal St., Fort Wayne, Ind. (See page 953.)

Wesco Supply Co., Seventh St. & Clark Ave., St. Louis, Mo. (Sole Distributors for Midvale Machine Works, St. Louis, Mo.)

Western Mfg. Co., Sixth Ave., E. & S. Third St., Oskaloosa, Ia. "Eco."

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Romort Mfg. Co., Oakfield, Wis.) (See pages 310 and 311.)

BOXES, STUFFING—See Boxes, Motor Boat Stuffing

BOXES, TOOL—See Boxes, Metal Tool; also Boxes, Wood Tool; also Boxes, Motorcycle Metal Tool

BOXES, Tool and Battery, for Fords

(Metal Tool and Battery Boxes for use on running board)

Corcoran-Victor Co., 712 Reading Rd., Cincinnati, O. "Victor."

Globe Machine & Stamping Co., 1200-50 W. 76th St., Cleveland, O. (See page 1049.)

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ARE

AIR HOSE RETRIEVERS

They keep the hose out of the way and out of sight at all times and do it AUTOMATICALLY

NOTHING TO RUN INTO

NOTHING TO STUMBLE OVER

HOSE ALWAYS ACCESSIBLE

For the Garage floor or sidewalk at curb.

The Hale Electric and Engineering Co.

Manufacturers of automatic motor-driven air compressors and all appurtenances.

CLEVELAND, O. U. S. A

HYATT ROLLER BEARINGS

WHEREVER wheels turn—motor vehicle, tractor, factory, mine—there you will find Hyatt bearings reducing friction, saving wear, tear and labor.

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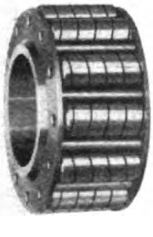
DETROIT

Tractor Bearings Div.

CHICAGO
Industrial Bearings Div.
NEW YORK CITY



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2,500 Service Stations and Dealers

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Baltimore—Conant-Thompson Elec. Co., 1102 Maryland Ave.
Birmingham—Higdon Auto Battery Co., 2201 Ave. A.
Boston—Perrine Company, 48 Cummington St.
Buffalo—The Battery & Starter Co., Inc., 879 Main Street.
Cedar Rapids—Electrical Service Co., Inc., 412 2d Avenue E.
Chicago—U. S. Light & Heat, 1402 Ry. Exchange.
Cincinnati—The Silva Co., 266 Eggleston Ave.
Cleveland—The Bissinger Company, 2352 Euclid Ave.
Columbus—The Silva Co., 385 S. Fourth St.
Covington—The Silva Co.
Dallas—Acme Battery Co., Ervay & Cadiz.
Denver—The Auto Storage Battery Co., 756 Broadway.
Des Moines—Capital Battery & Electric Co., 1113-1115 Locust St.
Detroit—United Electric Service Co., 43 Brady St.
El Paso—El Paso Battery & Ignition Co., 214 W. San Antonio St.
Harrisburg—Battery Service Corp., 206 N. Second St.
Houston—Houston Electrical Ser. Co., 1405 Main St.
Indianapolis—The Gibson Co., 418 N. Capitol Ave.
Jacksonville—Brown Battery Co., 211 W. Adams St.
Kansas City—Pack Battery & Equipment Co., 1409-1411 McGee St.
Little Rock—Automotive Service Co., 513 Spring St.
Los Angeles—Electric Equipment Co., 1240 South Hope St.
Louisville—Louisville Storage Battery Co., 726 South Fourth Ave.
Memphis—The Storage Battery Ser. & Sales Co., 383 Monroe Ave.
Minneapolis—General Service, Inc., Harmon Place & 10th St.
New Orleans—Electric Battery Co., 805 Howard Ave.
New York—H. B. Shonts Co., Inc., 157 West 54th St.
Oklahoma City—Metropolitan Electric Service Co., 5th & Robinson Sts.
Omaha—Master Sales Co., 414-18 South 12th St.
Philadelphia—Auto Equipment & Service Co., 1421 N. Broad St.
Pittsburgh—Keelan-Lyons Co., 451-455 Melwood Ave.
Portland, Ore.—Sunset Elec. Co., N. 8th & Davis Sts.
St. Louis—Automobile Battery Ser. Co., 3136 Locust St.
Salt Lake City—The Motor Car Equipment Co., 268 South Second St.
San Francisco—Automotive Service Agency, Van Ness & O'Farrell.
Scranton, Pa.—Battery Service Sta., 352 Adams Ave.
Seattle—Sunset Electric Co., 1507-9-11 Broadway.
Springfield, Mass.—Perrine Co., 95 Broadway.
Syracuse—Syracuse Electric Service, 409 Grape St.
Washington, D. C.—District Battery & Elec. Co., 1724 G. St. N. W.

CANADA

Calgary—Delta Electric, 1002 First St., W.
Edmonton—Fred Angel Co., 10176 104th St.
Montreal—Auto Elec. Service, 109 Sherbrooke St., W.
Regina—Ryan Motors, Ltd., 12th & Hamilton Sts.
Hamilton, Ont.—W. H. Cooper & Co., 101 King St. W.
Saskatoon—Lemery Dennison Elec., 135 2d Ave. N.
Toronto—W. H. Cooper & Co., 104 Adelaide St. E. & 620 Yonge St.
Vancouver—Hill Limited, 650 Howe Ave.
Winnipeg—Auto Supply & Electric Co., Ltd., 469 Portage Ave.

If there is no U S L Service Station in your city, address nearest distributor or

U S LIGHT & HEAT CORPORATION, Niagara Falls

BRANCHES: New York, Detroit, Chicago, Kansas City, San Francisco, Washington, D. C.

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BOXES, Tool and Battery, for Fords (Continued)

Hayes Mfg. Co., 4525 Maybury Grand Ave., Detroit, Mich.
Mitchell & Son, G. F., 6501 Cedar Ave., Cleveland, O.
Victor—See Corcoran-Victor Co.

BOXES, TOTE—See Boxes, Sheet Metal Tote

BOXES, UNDERWATER EXHAUST—See Boxes, Motor Boat Underwater Exhaust

BOXES, Wood Battery

(See also Holders, Battery)

American Body Co., 1255-63 Niagara St., Buffalo, N. Y.
Churchill Cabinet Co., 2119 Churchill St., Chicago, Ill.
Hartzell, Geo. W., Piqua, O.
McLean Storage Battery Co., 721 Frankfort St., Cleveland, O.
Sisman Co., Andrew C., 1221 Beaufait Ave., Detroit, Mich.
Standard Cabinet Mfg. Co., E. Canal St., Peru, Ind.
West Division, F. M.—The New England Box Co., 225 Liberty St., Springfield, Mass.

BOXES, Wood Tool

(For Tool Bags—See Bags, Tool)

American Body Co., 1255-63 Niagara St., Buffalo, N. Y.
Only Grease Gun Co., Newton, Iowa.
Platt-Rubin Co., 2522-36 S. Western Ave., Chicago, Ill.
Standard Cabinet Mfg. Co., E. Canal St., Peru, Ind.
West Division, F. M.—The New England Box Co., 225 Liberty St., Springfield, Mass.

BRACES, Drive Shaft Housing, for Fords

Stewart, C. F., Wichita, Kans.

BRACES, FENDER, FOR FORDS—See Braces, Mud Guard

BRACES, HOUSING FOR FORDS—See Braces, Drive Shaft Housing

BRACES, Mud Guard or Fender, for Fords

(Small metal clamps for fastening mud guard and apron together to prevent rattling)

BB.—See Bayne Mfg. Co.
Bayne Mfg. Co., Bushnell, Ill. "BB." (See page 725.)
Bracefords—See Prince Mfg. Co.
Dunford—See Dunn Mfg. Co.
Dunn Mfg. Co., 115 N. 15th St., Clarinda, Ia. "Dunford."
Edelmann & Co., E., 2633 N. Crawford Ave., Chicago, Ill.
Gahm-McCormick Co., 906 E. Main St., Streator, Ill. (See page 1139.)
Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.
Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)
Prince Mfg. Co., 6 Liberty Ct., Sumter, S. C. "Bracefords."
Republic Auto Parts Co., 31-35 Tenth St., Long Island City, N. Y.
Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 507.)
Whitehouse Mfg. Co., 42 Elm St., Newark, N. J. (See page 637.)

BRACES, Running Board, for Fords

(Fittings to reinforce or supplement the running board hangers to eliminate sagging of the running boards)

Apco Mfg. Co., Providence, R. I.
Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for "Presto" Braces.) (See page 275.)
BB—See Bayne Mfg. Co.
Banner Accessory Mfg. Co., St. Louis, Mo. (See page 601.)
Bayne Mfg. Co., Bushnell, Ill. "BB." (See page 725.)
Bear Mfg. Co., E. 17th St. & First Ave., Rock Island, Ill.
Biltwell Accessories Co., 401 E. 23rd St., New York, N. Y.
Bracefords—See Prince Mfg. Co.
Brewer Tichener Corp., Cortland, N. Y. (See page 567.)
Brocksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.
Bull Dog—See Fulton Co.
C. M. & D.—See Chicago Mfg. & Distributing Co.
Casey Asco Mfg. Co., 1504 Grand Ave., Kansas City, Mo.
Chicago Mfg. & Distributing Co., 411 S. Sangamon St., Chicago, Ill. "C. M. & D."
Continental Auto Parts Co., 1807 E. 17th St., Columbus, Ind. (See page 419.)
Dow Wire & Iron Works, Louisville, Ky. (See page 157.)
Dunham Co., Thomas, Aurora, Ill. (See page 167.)
Ekern Bros. Mfg. Co., Flandreau, S. Dak.
Ford Relief Spring & Frame Supporter Co., 7 E. 42nd St., New York, N. Y.
Fulton Co., 75th & National Aves., Milwaukee, Wis. (Sole Distributors for W. H. Thomas, Milwaukee, Wis. "Bull Dog.") (See page 1033.)
Gahm-McCormick Co., 906 E. Main St., Streator, Ill. (See page 1139.)
Hall Air Lock & Railway Supply Co., Oakville, Iowa.
Metal Specialties Mfg. Co., 338-52 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 547.)
Midway Mechanical Co., St. Paul, Minn. (See page 667.)
Perfection Parts Co., 2163 Barnard St., Cincinnati, O.
Presto—See Metal Specialties Mfg. Co.
Prince Mfg. Co., 6 Liberty Ct., Sumter, S. C. "Bracefords."
Shurnuff Mfg. Co., 3126 Locust St., St. Louis, Mo.
Simplex Mfg. Co., 1800 Jackson St., Anderson, Ind.
Standley Skid-Chain Co., Boone, Iowa. (See page 679.)
Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 507.)
Stoll Mfg. Co., 3250 Larimer St., Denver, Colo.
Thomas, W. H.—See Fulton Co.
Vaughn-Harris Co., Vermillion, S. Dak.
W-A—See Whetstone & Co.
Walker Mfg. Co., Hamilton & Michigan Sts., Racine, Wis.
Whetstone & Co., John H., Court St., Lapeer, Mich. "W-A."
Williams Wagon Works, Third St., Macon, Ga.

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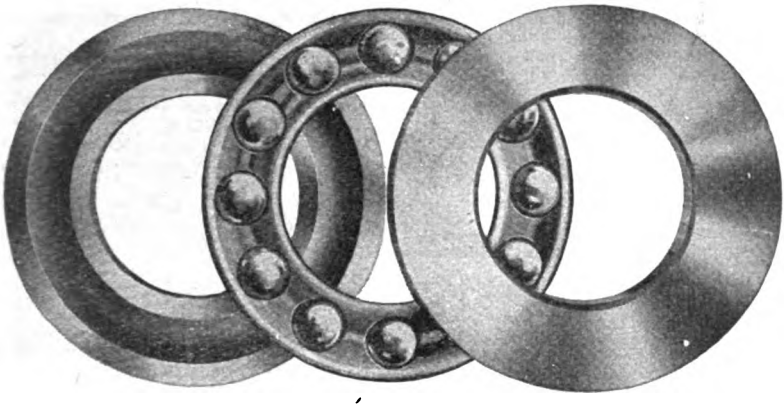

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DROP FORGINGS.

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Lancaster, Penna.

Western Sales Office: 1012 Ford Bldg., Detroit, Mich.

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BRACES, Steering Column, for Fords

(Brace to attach to dashboard to steady steering column)

Apco Mfg. Co., Providence, R. I.

BRACKETS, Automatic Headlight

(Interconnected with steering gear or operated from dashboard so as to turn headlights with front wheels and illuminate the road around turn ahead of car)

Common-Sense Light Control Co., Lindsey Bldg., Dayton, O.

Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass.

Dempsey Co., James E., 406 State St., Manitowoc, Wis. "Jed-Ray."

Faw, J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributors for Culver-Stearns Brackets.) (See page 241.)

Hofweber Mfg. Co., 121 S. Front St., La Crosse, Wis.

Jed-Ray—See Dempsey Co.

Pennock—See Specialty Mfg. Co.

Specialty Mfg. Co., Minerva, O. "Pennock."

Wilcox Patents, Chicago Savings Bank Bldg., Chicago, Ill.

BRACKETS, Automatic Headlight, for Fords

(Interconnected with steering gear or operated from dashboard so as to turn headlights with front wheels and illuminate the road around turn ahead of car)

Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich. "Ospeco."

Ospeco—See Michigan Auto Products Co.

Reliance Spring & Mfg. Co., 3911 Second Ave., Brooklyn, N. Y.

Riblet Mfg. Co., 502 Maxwell Bldg., Long Beach, Cal. (See page 1123.)

BRACKETS, Stationary Headlight

Cleveland Hardware Co., 4500 Hamilton Ave., Cleveland, O.

National Jack & Mfg. Co., 130-34 S. Clinton St., Chicago, Ill.

BRACKETS, HEADLIGHT, FOR FORDS—See Brackets, Automatic Headlight

BRACKETS, Side and Tail Lamp

Brewer Tichener Corp., Cortland, N. Y. (See page 567.)

Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O.

Douglas Auto-Appliance Co., 2845 Chicago Ave., Minneapolis, Minn. (See page 483.)

Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Martin & Co., Edward, 23 S. Clinton St., Chicago, Ill. "Perfection."

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

Perfection—See Martin & Co.

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.

Strieby & Foote Co., 301 Ogden St., Newark, N. J.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

BRACKETS, Timer Elevating, for Fords

Fulton Co., 75th & National Aves., Milwaukee, Wis. (Sole Distributors for Milwaukee Air Power Pump Co., Milwaukee, Wis.) "Sta-Kleen." (See page 1033.)

Mill City Co., Minneapolis, Minn.

Milwaukee Air Power Pump Co.—See Fulton Co.

Sta-Kleen—See Fulton Co.

Thomas Andrews Corp., Waukegan, Ill. (See page 723.)

BRACKETS or SUPPORTS, Engine Repair, for Fords

Apco Mfg. Co., Providence, R. I.

Backus, C. R., Mystic, Conn. "Johnson."

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 174 and 175.)

Goodrich-Lenhart Mfg. Co., Hamburg, Pa. (See page 721.)

Guaranty Motors Co., Cambridge, Mass. (See page 471.)

Johnson—See Backus, C. R.

Lake Erie Accessories Co., 3405 Perkins Ave., Cleveland, O.

Rich Mfg. Co., 1777 Broadway, New York, N. Y. (See page 1223.)

Simonsen Iron Works, Sioux Rapids, Iowa. "Victory."

Simpson Mfg. Co., 205 W. Main St., Newark, O. (See page 743.)

Victory—See Simonsen Iron Works.

Wilkes-Barre Welding Co., 6 W. Ross St., Wilkes-Barre, Pa.

BRAKE ADJUSTERS—See Adjusters, Brake

BRAKE BAND RIVETING JIGS FOR FORDS—See Jigs, Brake Band Riveting

BRAKE BANDING FOR FORDS—See Lining, Brake

BRAKE BANDING CUTTERS—See Cutters, Brake Lining

BRAKE BANDS—See Brakes, Expanding and Contracting; also Lining, Brake

BRAKE CABLE—See Rope, Steel Wire

BRAKE COMPOUNDS — See Dressing, Brake

BRAKE DRUMS—See Drums, Brake

BRAKE EQUALIZERS FOR FORDS—See Equalizers, Brake

BRAKE EQUALIZERS, TRAILER — See Equalizers, Trailer Brake

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Manufacturers of Plates for Automobile and Farm Lighting Batteries. Brass and Lead Parts.

Rubber Jars, Covers, Battery Cases, Wood Separators.

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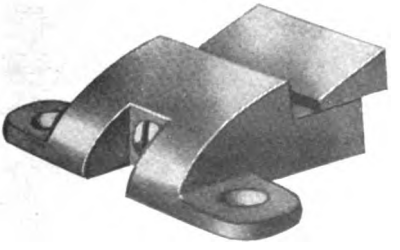

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(OF N. J.)

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BRAKE FACING—See Lining, Brake

BRAKE LINING—See Lining, Brake

BRAKE LINING CUTTERS—See Cutters, Brake Lining

BRAKE ROD ANTI - RATTLERS FOR FORDS—See Anti-Rattlers, Brake Rod; also Supports, Brake Rod

BRAKE ROD GUIDES FOR FORDS—See Supports, Brake Rod

BRAKE ROD SUPPORTS FOR FORDS—See Supports, Brake Rod

BRAKE RODS—See Rods, Brake

BRAKE SHOES FOR FORDS—See Shoes, Brake

BRAKES, Air

Christensen Engineering Co., 425 E. Water St., Milwaukee, Wis.

L-W—See Lane Air Brake Co.

Lane Air Brake Co., San Francisco, Cal. "L-W."

Parker Appliance Co., 2619 Vermont Ave., N. W., Cleveland, O.

BRAKES, COASTER—See Brakes, Motorcycle

BRAKES, CONTRACTING—See Brakes, Expanding and Contracting

BRAKES, CONTRACTING FOR FORDS—See Brakes, Emergency Contracting

BRAKES, Electric

Hartford, Edward V., 35 Warren St., New York, N. Y. (See page 859.)

BRAKES, Emergency Contracting, for Fords

(External contracting band brakes designed to operate on regular brake drum)

A-C Mfg. Co., 2251 W. Grand Ave., Chicago, Ill.

Bennett Mfg. Co., 461 Second St., Oakland, Cal.

Clipper Tool Co., 284 Mills St., Buffalo, N. Y.

Clapp-Eastham Co., 139 Main St., Cambridge, Mass. "Holdford."

Duplex—See Raybestos Co.

Duplex Transmission Co., 3159 Army St., San Francisco, Cal.

Master Service Co., 2205 S. Main St., Los Angeles, Cal. (See page 1165.)

Moore—See Tractor-Train Co.

Perfection Parts Co., 4208 Glenway Ave., Cincinnati, O.

Pla Safe Co., Brookville, Pa.

Raybestos Co., Bridgeport, Conn. "Raymond," "Duplex." (See page 573.)

Raymond—See Raybestos Co.

Rischmuller Mfg. Co., 3442 19th St., San Francisco, Cal.

Tractor-Train Co., 1344 Wall St., Los Angeles, Cal. "Moore." (See page 1137.)

BRAKES, Expanding and Contracting

Duplex—See Raybestos Co.

Raybestos Co., Bridgeport, Conn. "Raymond," "Duplex." (See page 573.)

Raymond—See Raybestos Co.

BRAKES, Motorcycle

Corbin Screw Corp., High St., New Britain, Conn.

Eclipse Machine Co., Elmira, N. Y. "Morrow." (See page 525.)

Morrow—See Eclipse Machine Co.

New Departure Mfg. Co., 2721 S. Michigan Ave., Chicago, Ill.

BRAKES, SPRAG FOR FORDS—See Sprag, Ratchet

BRASS CASTINGS—See Castings, Bronze and Brass

BRASS CHECKS—See Checks, Brass Time, Tool and Pay

BRASS HAMMERS—See Hammers, Brass and Copper

BRASS, IRON LINED TUBING—See Tubing, Iron Lined

BRASS MALLETS—See Hammers, Brass and Copper

BRASS MELTING FURNACES—See Furnaces, Brass Melting

BRASS RADIATOR CAPS — See Caps, Brass Radiator

BRASS RIVETS—See Rivets, Brass

BRASS, ROD—See Brass and Copper, Sheet and Rod

BRASS, SHEET—See Brass and Copper, Sheet and Rod

BRASS TESTING INSTRUMENTS—See Instruments, Metal Testing

BRASS TUBING—See Tubing, Brass

BRASS and COPPER, Sheet and Rod

(For Tubing—See Tubing, Brass; for Castings—See Castings, Brass and Bronze)

American Brass Co., Waterbury, Conn. (See page 165.)

American Brass Co. (Kenosha Branch), Kenosha, Wis.

Bets-Pierce Co., Cleveland, O. (Distributors.) (See page 915.)

Bridgeport Brass Co., Bridgeport, Conn. (See page 907.)

Buffalo Copper & Brass Rolling Mill, Military Rd. & Hertel Ave., Buffalo, N. Y.

Chase Rolling Mill Co., Grand St., Waterbury, Conn.

Cleveland Brass & Copper Mills, Cleveland, O.

Continuous Rolling Mills of the Continuous Casting Corp., Garwood, N. J.

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Buffalo Branch, Buffalo, N. Y.
Kenosha Branch, Kenosha, Wis.
Torrington Branch, Torrington, Conn.
Waterbury Branch, Waterbury, Conn.

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Chicago, Ill., 29 East Madison St.
Boston, Mass., 172 High St.
Providence, R. I., 131 Dorrance St.
Cincinnati, Ohio, 707 Traction Bldg.
Cleveland, Ohio, 912 Citizens Bldg.
Philadelphia, Pa., 1401 Widener Bldg.
Pittsburgh, Pa., 904 Union Bank Bldg.
Detroit, Mich., Book Bldg.
San Francisco, Cal., 412-414 Balfour Building

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BRASS and COPPER, Sheet and Rod (Continued)

Dallas Brass & Copper Co., Chicago, Ill. (Mill Agents.) (See page 167.)

Detroit Copper & Brass Rolling Mills, Clark Ave. & Wabash R. R., Detroit, Mich.

International Nickel Co., 43 Exchange Pl., New York, N. Y. "Monel Metal."

Manhattan Brass Co., 328 E. 28th St., New York, N. Y.

Michigan Copper & Brass Co., 5851 W. Jefferson Ave., Detroit, Mich. "Wolverine."

Monel Metal—See International Nickel Co.

New Haven Copper Co., Seymour, Conn.

New Jersey Tube Co., Kingsland Ave., Harrison, N. J.

Randolph-Clowes Co., 334 Bank St., Waterbury, Conn.

Rome Brass & Copper Co., E. Dominick St., Rome, N. Y.

Scovill Mfg. Co., Waterbury, Conn. (See page 845.)

Seymour Mfg. Co., 87 Franklin St., Seymour, Conn.

Stamford Rolling Mills Co., 347 Madison Ave., New York, N. Y.

Taunton-New Bedford Copper Co., Taunton, Mass.

Winchester Brass & Copper Co., Meadow St., Winsted, Conn.

Wolverine—See Michigan Copper & Brass Co.

BRAZIERS, CAST IRON — See Welding, Autogenous

BRAZING COMPOUNDS—See Compounds, Brazing

BRAZING FLUX—See Compounds, Brazing

BRAZING TORCHES—See Torches, Gasoline; also Torches, Acetylene; also Machines, Autogenous Welding

BREAST DRILLS—See Drills, Breast

BREATHER PIPES FOR FORDS — See Breathers, Crank Case

BREATHERS, Crank Case, for Fords

(Breather pipe with large filler opening to take the place of steel cap on small oil filling hole on front end of motor)

Apco Mfg. Co., Providence, R. I.

Bear Mfg. Co., E. 17th St. & First Ave., Rock Island, Ill.

Bowen Products Corp., Auburn, N. Y. "Empress." (See page 331.)

Dunham Co., Thos., Aurora, Ill. (See page 167.)

Empress—See Bowen Products Corp.

Excelsior Auto Parts & Supply Co., Botsford, Conn.

Greer, Fredric, 525 W. Van Buren St., Chicago, Ill.

Republic Auto Parts Co., 31-35 Tenth St., Long Island City, N. Y.

Vortox Mfg. Co., 105 W. Commercial St., Pomona, Cal.

BROACHING MACHINES—See Machines, Broaching

BROACHING PRESSES — See Machines, Broaching

BROADCLOTH, Upholstery

(See also Trimmings, Cloth and Carpet)

American Mills Co., 395 Broadway, New York, N. Y.

American Woolen Co. of N. Y., 225 Fourth Ave., New York, N. Y.

Bradford Fabrics Co., 1753-55 Broadway, New York, N. Y. "Sealtex." (See page 675.)

Bridgeport Coach Lace Co., Bridgeport, Conn. (See page 167.)

Laidlaw Co., 16 W. 60th St., New York, N. Y. (See pages 253 and 617.)

Sealtex—See Bradford Fabrics Co.

Roy Woolen Co., 500 Broadway, Watervliet, N. Y.

Seaco—See Seamans & Cobb Co.

Seamans & Cobb Co., Boston, Mass. "Seaco." (See page 775.)

Slater & Sons, Webster, Mass.

Strong Textile Co., 245 W. 55th St., New York, N. Y. "Strongtex." (See page 251.)

Strongtex—See Strong Textile Co.

Waterloo Woolen Mfg. Co., 228 E. Main St., Waterloo, N. Y.

BROKERS and BANKERS, Financial

(Covering only Brokers and Bankers who Advertise in this Publication)

Andrews & Co., 165 W. Washington St., Chicago, Ill. (See page 167.)

Commercial Credit Co., Baltimore, Md. (See page 173.)

Commercial Motors Mortgage Corp., Morgan Bldg., Buffalo, N. Y. (See page 59.)

Metropolitan Credit Corp., Financial Service Bldg., 9 E. 40th St., New York, N. Y. (See page 63.)

BROKERS, Patent

(Covering concerns who buy and sell patents)

Ogden Mfg. Co., 506 Polk Bldg., Des Moines, Ia. (See page 91.)

BROKERS, Real Estate

Simon & Co., N. J., 330 S. Dearborn St., Chicago, Ill. (See page 57.)

BRONZE-BACKED BEARINGS—See Bearings and Bushings

BRONZE-BACKED BUSHINGS—See Bearings and Bushings

BRONZE, BEARING—See Metals, Bearing

BRONZE BUSHINGS—See Bushings, Bronze; also Metals, Bearing

BRONZE CASTINGS—See Castings, Bronze and Brass

BRONZE PAINTS—See Paints, Aluminum

BRONZE ROPE—See Rope, Bronze Wire

BRONZE TESTING INSTRUMENTS—See Instruments, Metal Testing

BRONZE WIRE ROPE—See Rope, Bronze Wire

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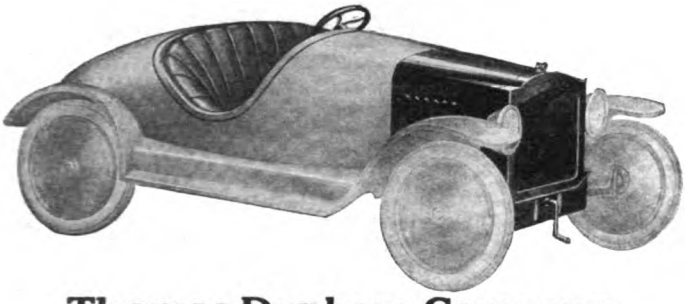

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BROOMS, Steel Wire

(For cleaning garage and shop floors)

American Wire Brush Co., 202-04 Centre St., New York, N. Y. "Minerva."
Minerva—See American Wire Brush Co.
Osborn Mfg. Co., 5401 Hamilton Ave., N. E., Cleveland, O.

BRUSHES, CAR WASHING—See Washers, Vehicle

BRUSHES, GENERATOR—See Brushes, Magneto

BRUSHES, Magneto, Starter and Generator

(Carbon, Metal and Woven Wire)

A. C. Ignition Co., Marquette Bldg., Detroit, Mich.
American Carbon & Battery Co., East St. Louis, Ill.
Arrow—See Niehoff & Co.
Bay State Research & Mfg. Co., 170 Third St., Chelsea, Mass.
Becker Bros., 23-31 N. Jefferson St., Chicago, Ill. (See page 171.)
Bee Cee—See Brown & Caine.
Brown & Caine, 2112 Michigan Ave., Chicago, Ill. "Bee Cee." (See page 625.)
Cartung Research & Mfg. Co., 160 John St., Brooklyn, N. Y.
Carballoy Products Co., Bellevue, O. (See page 631.)
Chapin Co., Chas. E., 201 Fulton St., New York, N. Y.
Colebaugh Self Lubricating Carbon Co., 1503 Columbia Ave., Philadelphia, Pa. "No-Spark."
Corliss Carbon Co. (E. Bradford), Bradford, Pa.
Ebco—See Electric Brush Co.
Electric Brush Co., Dover, N. J. "Ebco."
Gilfillian Bros. Smelting & Refining Co., 217 W. Sixth St., Los Angeles, Cal.
Graphalloy—See Graphite Metallizing Corp.
Graphite Metallizing Corp., 1050 Nepperhan Ave., Yonkers, N. Y. "Graphalloy."
Graphite Products Co., 5155 Wakefield St., Philadelphia, Pa.
Guaranteed Magneto Parts Co., 210 W. 54th St., New York, N. Y. (See page 1147.)
Jeandron, W. J., 172 Fulton St., New York, N. Y. (Importer.) "Le Carbone."
Lance Mfg. Co., Center St., New York, N. Y.
Le Carbone—See Jeandron, W. J.
Millwood-Brackett Co., 1601 Locust St., Des Moines, Iowa. (See page 1151.)
National Carbon Co., Cleveland, O. "Pyramid." (See page 169.)
Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)
Niehoff & Co., Paul G., 232-42 E. Ohio St., Chicago, Ill. "Arrow." (See page 677.)
No-Spark—See Colebaugh Self Lubricating Carbon Co.
Ohio Carbon Co., 8219 Almira Ave., Cleveland, O.
Otter Mfg. Co., 243 W. 17th St., New York, N. Y.
Pyramid—See National Carbon Co.
Specialty Mfg. Co., Arlington, Mass. "Superior."
Speer Carbon Co., Theresa St., St. Marys, Pa. (See page 169.)
Stackpole Carbon Co., St. Marys, Pa.
Standard Motor Products Co., 43-45 E. 19th St., New York, N. Y.
Superior—See Specialty Mfg. Co.
Universal Carbon Co., First St. & Riverside Ave., Dundee, Ill.

BRUSHES, Paint and Varnish

Acme White Lead & Color Works, 8250 St. Aubin Ave., Detroit, Mich.
Boars Head—See Fisher-Mitchell Co.
Bowditch, John F., 166 Commercial St., Boston, Mass.
Bradley & Smith, 251 Pearl St., New York, N. Y.
Burton & Co., A. E., 75 Pearl St., Boston, Mass.
Clinton & Co., E., 2119 Arch St., Philadelphia, Pa.
Devoe & C. T. Raynolds Co., F. W., 101 Fulton St., New York, N. Y.
Eclipse Air Brush & Compressor Co., 79 Orange St., Newark, N. J.
Fisher-Mitchell Co., 186 Mitchell St., New York, N. Y. "Boars Head."
Gerts, Lumbard & Co., 154 W. Randolph St., Chicago, Ill.
Hanlon & Goodman Co., 270-72 Pearl St., New York, N. Y.
Miles Bros. & Co., 1957-67 Pitkin Ave., Brooklyn, N. Y.
Packard Co., A., 166 Commercial St., Boston, Mass.
Rubberset Co., 56 Ferry St., Newark, N. J.
Thayer & Co., P. E., Pawtucket, R. I.
Thum, Chas. D., 150 N. Third St., Philadelphia, Pa.
United Brush Manufactories, 202-05 Lafayette St., New York, N. Y.
Whiting-J. J. Adams Co., John L., Boston, Mass. (See page 171.)

BRUSHES, Spark Plug

(Small Wire or Bristle Brushes for cleaning Spark Plugs)

American Wire Brush Co., 202-04 Centre St., New York, N. Y.
North Ridge Brush Co., 252 Clark St., Freeport, Ill.
Osborn Mfg. Co., 5401 Hamilton Ave., N. E., Cleveland, O.

BRUSHES, STARTER—See Brushes, Magneto.

BRUSHES, Timer, for Fords

Hudson Motor Specialties Co., 1934 Arch St., Philadelphia, Pa.
Mil-Mac Mfg. Co., 16th St. & Glenwood Ave., Philadelphia, Pa. "Never Miss."
Motor Specialties Co., Waltham, Mass.
Never Miss—See Mil-Mac Mfg. Co.
Redmond—See Riverside Specialty Works.
Riverside Specialty Works, Riverside, Cal. "Redmond."
Rush Co., W. S., 2213-15 N. Broadway, Los Angeles, Cal.

BRUSHES, VARNISH—See Brushes, Paint and Varnish

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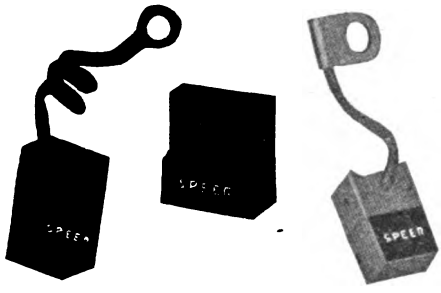

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BRUSHES, WASHING—See Washers, Vehicle

BRUSHES, WHEEL—See Washers, Vehicle

BRUSHES, Wire Buffing

Auto-Tire Vulcanizing Co., 140 Powell St., Lowell, Mass. "Harrison."
Auto Tool Co., 532 Boston Blk., Minneapolis, Minn. "Roto."
Ferro—See Ferrodowill Mfg. Co.
Ferodowill Mfg. Co., 214 W. Indiana Ave., St. Paul, Minn. "Ferro."
Harrison—See Auto-Tire Vulcanizing Co.
Herold Mfg. Brush Co., Cleveland, O.
Luther Grinder Mfg. Co., Milwaukee, Wis. (See page 171.)
Milwaukee Brush Co., Milwaukee, Wis.
Osborn Mfg. Co., 5401 Hamilton Ave., N. E., Cleveland, O.
Pelton Brush Co., Cleveland, O.
Roto—See Auto Tool Co.

BUCKETS, Collapsible

(Collapsible or Folding Pails or Buckets for carrying in car for filling Radiators)

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 321.)
Auto-Kamp Equipment Co., 2008 Sheridan Ave., Saginaw, Mich.
B. E. Mfg. Co., 18 W. 18th St., New York, N. Y. "Bemco." (See page 321.)
Baker-Lockwood Mfg. Co., 618 Delaware St., Kansas City, Mo.
Bemco—See B. E. Mfg. Co.
Boko—See Defiance Welding Co.
Brooks Tent & Awning Co., 1655 Arapahoe St., Denver, Colo.
Defiance Welding Co., Defiance Bldg., Defiance, O. "Boko."
Economy Seat Co., 3132-36 S. Canal St., Chicago, Ill. "Esco."
Duplex—See Planet Co.
Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 545.)
Esco—See Economy Seat Co.
Faultless—See National Mfg. Co.
Genesee Mfg. Co., 516-18 Harrison St., Flint, Mich.
Goodrich Co., B. F., S. Main St., Akron, O.
Gordon Co., J. P., 555 N. Fourth St., Columbus, O. (See page 319.)
Hinson—See Powers Mfg. Co.
Martin Mfg. Co., 317 Forest Rose Ave., Lancaster, O.
National Mfg. Co., 101 S. E. Fifth St., Des Moines, Iowa. "Faultless."
Planco—See Planet Co.
Planet Co., 180 N. Elm St., Westfield, Mass. "Duplex," "Planco."
Powers Mfg. Co., Waterloo, Ia. "Hinson." (See page 593.)
R-E—See Roose Mfg. Co.
Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E." (See pages 129, 151, 325 and 327.)
Schaefer Tent & Awning Co., Denver, Colo. (See page 117.)
Specialty Shop, 1752-54 E. 17th St., Cleveland, O.
Whitall-Tatum Co., 46-48 Barclay St., New York, N. Y.

BUCKLES, Strap

Anchor—See North & Judd Mfg. Co.
Auto-Vehicle Parts Co., 3301 Colerain Ave., Cincinnati, O. "Auveco."
Auveco—See Auto-Vehicle Parts Co.
Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.
Herman Mfg. Co., 1214 H St., N. W., Washington, D. C.
North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn. "Anchor."
Woodruff & Sons Co., Walter W., Mount Carmel, Conn.

BUCKLES, TURN—See Turn-Buckles

BUFFERS, ELECTRIC PORTABLE — See Drills, Electric Portable

BUFFERS, TIRE — See Machines, Electric Tire Buffing

BUFFERS, Tube Patching

(Small metal buffer to be used instead of sandpaper when preparing a tube for patching)

Cordell Mfg. Co., 709 Pine St., St. Louis, Mo.

BUFFING BRUSHES, WIRE—See Brushes, Wire Buffing

BUFFING COMPOUNDS—See Compounds, Buffing

BUFFING MACHINES, TIRE—See Machines, Electric Tire Buffing

BUILDINGS, PORTABLE — See Garages, Portable

BULB BOXES—See Cases, Extra Lamp Bulb

BULB CASES—See Cases, Extra Lamp Bulb

BULBS, HEADLIGHT—See Lamps, Miniature Incandescent

BULBS, HORN—See Bulbs, Rubber Horn

BULBS, INCANDESCENT LAMP — See Lamps, Miniature Incandescent

BULBS, LAMP—See Lamps, Miniature Incandescent

BULBS, Rubber Horn

Alpha—See Parker, Stearns & Co.
Davol Rubber Co., Providence, R. I.
Firestone Tire & Rubber Co., Miller & Sweitzer Aves., Akron, O.
Goodrich Co., B. F., S. Main St., Akron, O.
Mechanical Rubber Co., C. & P. & Nickel Plate R. R., Cleveland, O.
Parker, Stearns & Co., 286 Sheffield Ave., Brooklyn, N. Y. "Alpha."
Pennsylvania Rubber Co., Jeannette, Pa.
United States Tire Co., 1790 Broadway, New York, N. Y.

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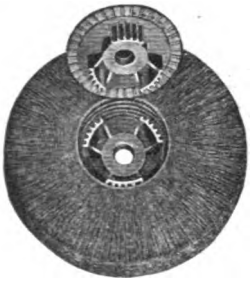

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BUMPERS, Automobile

(For protecting Lamps and Radiators; also for rear of car)

Acme—See Clevenger Engineering & Sales Co.

Ajusto—See Central Brass & Fixture Co.

American Chain Co., Bridgeport, Conn. (See page 535.)

American Metal Parts Mfg. Co.—See Fulton Co.

American Pulley Co., 4200 Wissahickon Ave., Philadelphia, Pa.

Au-To Compressor Co., Wilmington, O. "Oro."

Autoguard—See Stewart-Warner Speedometer Corp.

Badger Mfg. Corp., Milwaukee, Wis. "Simplex," "Protex," "Clover Leaf," "Presto." (See page 173.)

Balcrank—See Cincinnati Ball Crank Co.

Bellevue Mfg. Co., Bellevue, O.

Better—See New Era Spring & Specialty Co.

Biflex Products Co., Waukegan, Ill. "Boulevard," "Crescent," "Traffic." (See page 173.)

Boulevard—See Biflex Products Co.

Buckeye—See Central Brass & Fixture Co.

Bull Dog—See Toledo Cable Co.

Cambria Spring Co., 916-18 S. Los Angeles St., Los Angeles, Cal. "Hoover."

Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye," "Champion," "Standard," "Ajusto."

Champion—See Central Brass & Fixture Co.

Champion—See Milwaukee Auto Engine & Supply Co.

Chicago—See Western Brass Mfg. Works.

Cincinnati Ball Crank Co., 90 North St., Cincinnati, O. "Balcrank." (See page 333.)

Clevenger Engineering & Sales Co., 86 McKinley Pl., Edgewood, N. J. "Acme."

Clover Leaf—See Badger Mfg. Corp.

Columbus Auto Brass Co., Columbus, O. "Howe." (See page 1139.)

Conover—See New Jersey Tube Co.

Conqueror—See Milwaukee Auto Engine & Supply Co.

Cox Brass Mfg. Co., Albany, N. Y. "E-Z," "Endurance." (See page 261.)

Crescent—See Biflex Products Co.

Diamond—See Sager Co.

E-Z—See Cox Brass Mfg. Co.

Endurance—See Cox Brass Mfg. Co.

Fit-All—See Sager Co.

Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.

Fulton Co., 75th & National Aves., Milwaukee, Wis. (Sole Distributors for American Metal Parts Mfg. Co., Milwaukee, Wis.) (See page 1034.)

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. "Wilfit." (See pages 174 and 175.)

Glasgow—See Standard Safety Fender Corp.

Gray-Heath Co., 1440 S. Michigan Ave., Chicago, Ill. (See page 741.)

Guardian—See Milwaukee Auto Engine & Supply Co.

Halladay Co., L. P., 501 N. Monroe St., Streator, Ill. "Universal," "Simplex."

Hartford, Edward V., 35 Warren St., New York, N. Y. (See page 859.)

Hoover—See Cambria Spring Co.

Hoover Spring Co., 201-29 Franklin St., San Francisco, Cal.

Howe—See Columbus Auto Brass Co.

Igo Vertical Bumper Co., 149 W. Ohio St., Chicago, Ill.

Kimball & Co., C. P., 3900 S. Michigan Ave. Chicago, Ill.

Lyon—See Metal Stamping Co.

McGregor—See U. S. Auto Bumper Co.

Metal Stamping Co., 12th St. & East Ave. Long Island City, N. Y. "Lyon." "Metsco."

Metsco—See Metal Stamping Co.

Milwaukee Auto Engine & Supply Co. Milwaukee, Wis. "Conqueror," "Champion," "Waukee," "Sterling," "Trufit," "Guardian." (See page 316.)

New Era Spring & Specialty Co., 51-55 Cottage Grove St., S. W., Grand Rapids, Mich "Better."

New Jersey Tube Co., Newark, N. J. "Conover."

Nichols & Wright Motor Co., 42 Parkridge Ave., Buffalo, N. Y.

Oro—See Au-To Compressor Co.

Presto—See Badger Mfg. Corp.

Protex—See Badger Mfg. Corp.

Sager Co., J. H., 36-38 S. Water St., Rochester, N. Y. "Diamond," "Simplex," "Fit-All."

Simplex—See Badger Mfg. Corp.

Simplex—See Halladay Co.

Simplex—See Sager Co.

Standard—See Central Brass & Fixture Co.

Standard Safety Fender Corp., 80 Boylston Boston, Mass. "Glasgow."

Sterling—See Milwaukee Auto Engine & Supply Co.

Stewart-Warner Speedometer Corp., Chicago, Ill. "Autoguard." (See page 177.)

Taylor Spring & Equipment Co., 1722-26 Fairmount Ave., Philadelphia, Pa. "Teco."

Teco—See Taylor Spring & Equipment Co.

Toledo Cable Co., 1035 Grand Ave., Toledo, O. "Bull Dog."

Traffic—See Biflex Products Co.

Trufit—See Milwaukee Auto Engine & Supply Co.

Tyler Mfg. Co., 64-66 Pearl St., Boston, Mass. "Tymco."

Tymco—See Tyler Mfg. Co.

U. S. Auto Bumper Co., 3021-23 Michigan Ave., Chicago, Ill. "McGregor."

U. S. E. Corp., 7 W. 61st St., New York, N. Y.

United States Spring Co., 1120-26 S. Los Angeles St., Los Angeles Cal.

Universal—See Halladay Co.

Waukee—See Milwaukee Auto Engine & Supply Co.

Wayne Bumper Co., Ft. Wayne, Ind.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. "Chicago." (See page 1097.)

Wilfit—See Gemco Mfg. Co.

BUMPERS, for Fords

(For protecting Lamps and Radiators; also for rear of car)

American Metal Parts Mfg. Co.—See Fulton Co.

Autoguard—See Stewart-Warner Speedometer Corp.

Badger Mfg. Corp., Milwaukee, Wis. (See page 173.)

Better—See New Era Spring & Specialty Co.

Biltwell Accessories Co., 401 E. 23rd St., New York, N. Y.

Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O.

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TRADE MARK

Elegance, coupled with three times greater protection lifts this bumper out of the class of unseemly makeshifts and places it on the same high selling plane as the car itself. Jobber and dealer alike are finding the Biflex the first "really good bumper."

BOULEVARD—full nickel plated front..... $24.00 each
CRESCENT—upper bar nickel..... 22.00 each
TRAFFIC—full black enamel..... 20.00 each

Prices subject to regular jobber and dealer discount.
Write for full information covering list of cars and brackets for each.

BIFLEX PRODUCTS COMPANY, Waukegan, Illinois

BADGER
NECESSORIES

A PARTIAL list of Badger Automotive Equipment synonymous with "Trade Good Will and Dependable Service."

Bumpers: Channel and Diamond Bars, Spring Bar and De Luxe Spring Bar for the front and rear of practically any car.

Steering Wheels: 17 inch Stationary and Tilting for Ford Cars and Chevrolet "490."

"Saf-Lock" for Ford Cars.

Portable Tire Racks.

All-Steel Creepers.

Cable Tire Locks.

Running Board Luggage Carriers.

Cut-out Outfits.

Foot and Robe Rails.

Steel Cable and Rope Tow Lines.

Foot Throttles for Ford Cars.

Write for 44-page 1921 catalog

BADGER MFG. CORP.
Milwaukee, Wisconsin

Store Your Cars

COULDN'T you increase your production and reduce your cost per Car or Truck if you could only arrange *for equal monthly shipments* throughout the year?

Couldn't your Distributors and Dealers increase their sales if they could always make *immediate deliveries* from their floor or local warehouse, and not await delays of shipment, etc.?

Our charge for Storing Cars is figured to the *exact day—not fractional parts of a month.*

Investigate our plan for the purchase of Monthly Time Sales paper at 100% Spot Cash—no "Certificates" or "Holdbacks."

Commercial Credit Company
Cash Capital and Surplus, $3,700,000
BALTIMORE

Commercial Acceptance Trust
Cash Capital over $1,300,000
CHICAGO

MINNESOTA STORAGE BATTERY CO.,

BATTERY MANUFACTURERS

Factory and Main Offices
208-210 Fourth St. North

"Distributors and Dealers Wanted Throughout the United States"

MINNEAPOLIS MINNESOTA

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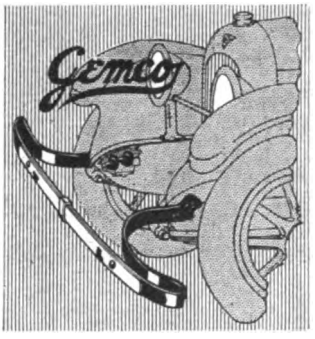
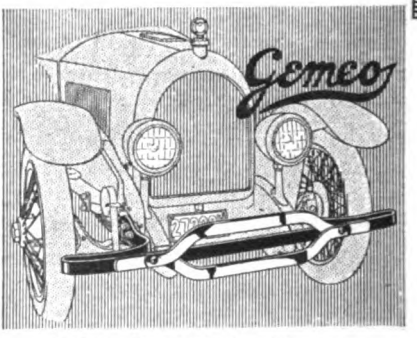
Popular Bumpers and Supplies



Mono-Spring Bumper

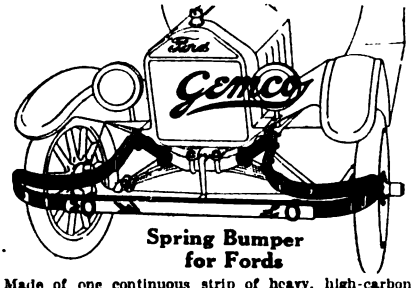
A one-piece spring bumper that may be attached to front and rear of most standard cars. Reinforcing plate of spring steel, bolted securely to the front of the bumper, increases its strength and adds greatly to its appearance. Retail prices, $11.50 and $13.00.



Triple-Gard Spring Bumper

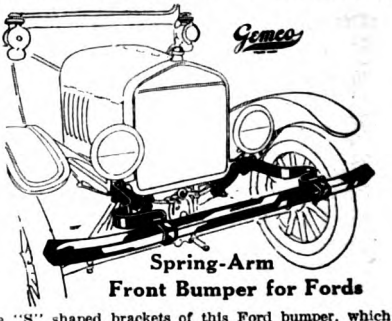
This handsome bumper offers the utmost in protection and appearance. The two protection bars—furnished in either nickel or black—are securely bolted to bumper rail. Bumper is attached to car with famous 3-way fastening—using forged hooks. Fits 90% of all cars made. Retail prices:

With Nickel Plated protection bars.....$21.50
With Black Enamel protection bars..... 19.50



Spring Bumper for Fords

Made of one continuous strip of heavy, high-carbon, oil-tempered steel, looped at the ends, this Gemco Spring Bumper is one of the very best for Ford cars. Reinforced in front with heavy steel plate. Complete unit is substantially fastened to two spring steel clamps attached to front of car frame. Black or nickel reinforcing bar. Retail prices, $10.00 and $11.50. Without reinforcing bar, $9.00.



Spring-Arm Front Bumper for Fords

The "S" shaped brackets of this Ford bumper, which are each made from one solid piece of tempered spring steel, absorb collision shock without damage to car frame. Bumper is attached securely to front of frame by means of two heavy dropped-forge yokes for each bracket. Bar is finished in nickel or black. Retail prices, $11.46 to $16.18.

Spring Arm Bumper

A durable, efficient bumper of pleasing appearance that fits most all cars, "S" shaped brackets are unusually strong, being made of specially heat-treated spring steel. Finished in Nickel or Black Enamel. Retail prices, $11.30 to $16.04.

Wilfit Bumper

Fits such a wide range of cars that only a limited assortment of bumpers need be carried. A strongly built, neat-looking bumper of growing popularity. Fits front or rear. Diamond or Channel Bar; Black or Nickel Finish. Retail prices, $10.82 to $16.28.

Gemco
MILWAUKEE

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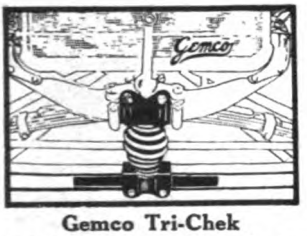
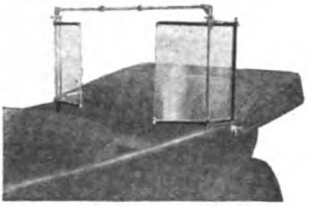
for Fords and Many Other Cars



Gemco Tri-Chek

Attached to the front of any Ford, between the leaf spring and axle, the Tri-Chek spiral spring increases riding comfort regardless of speed or road conditions. Absorbs the shock, snubs the rebound and stops side-sway. Makes steering easier, too. Retails at $5.30.

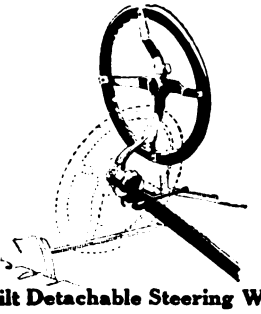


Gemco Tonn-O-Wings

These attractive-looking, practical tonneau wind-shields provide that long-sought rear-seat protection from wind and dust. Forward wings are hinged so they may be swung out of way of passengers entering or leaving the car. Beautifully made of best quality plate glass, securely set in solid frames by special Gemco method, which prevents loosening or rattling. Frames finished in black enamel with nickel plated trimmings. Tonn-O-Wings are quickly and easily attached—made to fit most cars. Retail prices, $51.00 to $60.00.

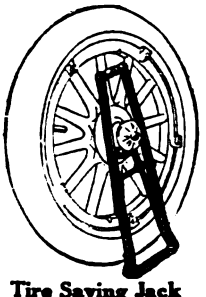
17-Inch Steering Wheels

For Fords and Chevrolet "490's." Beautifully finished corrugated rims of selected walnut, mounted on aluminum spider. Also made with black malleable spider in tilting and non-tilting styles. Retail prices, $5.32 to $7.44.



Full-Tilt Detachable Steering Wheel

Easily tilted or completely detached. Gives 8½ inches more room to enter or leave car. Protects car against theft. Corrugated 17-inch walnut rim; polished aluminum spider. Retail prices for Ford, Maxwell and Chevrolet, $12.00. For Dodge, Overland "4" and Briscoe, $12.50.



Tire Saving Jack

Takes the weight off the tires when the car is not in use. Easily placed in position. Made in 3 sizes. Fits all cars. Retail prices, $4.20 to $7.88.

Foot Accelerator With Foot Rest

For Fords. Operated independently of hand control. Gives greater driving freedom. In great demand. Installed easily and quickly. Retail price, $1.80.

Many new items are displayed in the 1921 Gemco Catalog, which is cross-indexed for every make of car. Send today for this valuable book. Your jobber can supply you with any of these Gemco Products.

GEMCO MANUFACTURING CO.

666 South Pierce Street MILWAUKEE, WIS.

Gemco MILWAUKEE

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BUMPERS, for Fords (Continued)

Cox Brass Mfg. Co., Albany, N. Y. "E-Z." (See page 261.)

Duplex Machine Co., 93 Lafayette St., Newark, N. J.

E-Z—See Cox Brass Mfg. Co.

Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.

Fulton Co., 75th & National Aves., Milwaukee, Wis. (Sole Distributors for American Metal Parts Mfg. Co., Milwaukee, Wis.) (See page 1034.)

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. "Wilfit." (See pages 174 and 175.)

Guardian—See Milwaukee Auto Engine & Supply Co.

Halladay Co., L. P., 501 N. Monroe St., Streator, Ill.

Hastings Mfg. Co., 36 Mill St., Hastings, Mich. (See page 567.)

Hoover Spring Co., 201-29 Franklin St., San Francisco, Cal.

International Metal Mfg. Co., Wayne Ave. & Berkley St., Philadelphia, Pa.

International Stamping Co., 400 N. Leavitt St., Chicago, Ill. (See page 1103.)

Lyon—See Metal Stamping Co.

McGregor—See U. S. Auto Bumper Co.

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y. "Lyon."

Milwaukee Auto Engine & Supply Co., Milwaukee, Wis. "Guardian." (See page 316.)

New Era Spring & Specialty Co., 51-55 Cottage Grove St., S. W., Grand Rapids, Mich. "Better."

R & R Mfg. Co., 203 La Salle St., Chicago, Ill.

Sager Co., J. H., 36-38 S. Water St., Rochester, N. Y.

Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 507.)

Stewart-Warner Speedometer Corp., Chicago, Ill. "Autoguard." (See page 177.)

Taylor Spring & Equipment Co., 1722-26 Fairmount Ave., Philadelphia, Pa. "Teco."

Teco—See Taylor Spring & Equipment Co.

U. S. Auto Bumper Co., 3021-23 Michigan Ave., Chicago, Ill. "McGregor."

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

Wilfit—See Gemco Mfg. Co.

BUMPERS, DOOR — See Anti-Rattlers, Door

BUMPERS, REAR—See Bumpers, Automobile

BUMPERS, RUBBER SPRING—See Bumpers, Automobile

BUMPERS, Spring

(Rubber or Spiral Spring Bumpers to prevent car frame from striking axle)

Accessory Supply Co., 12th & Tracy Sts., Kansas City, Mo. "Hickory."

American Rubber & Tire Co., 100 Beech St., Akron, O.

Booth—See Lansing Auto Bumper Co.

Boston Belting Co., 84 Lindon Park St., Boston, Mass.

Bridge Web Tire Co., 2963 Prairie Ave., Chicago, Ill.

Cincinnati Rubber Mfg. Co., Cincinnati, O. (See page 523.)

Combination Rubber Mfg. Co., Bloomfield, N. J.

Continental Rubber Works, 1962 Liberty St., Erie, Pa.

Empire Rubber & Tire Co., Mulberry St. & Clinton Ave., Trenton, N. J.

Essex Rubber Co., May & Beakes Sts., Trenton, N. J.

Everware Rubber Co., 241 Oregon St., Milwaukee, Wis.

Federal Rubber Co. (Cudahy), Milwaukee, Wis.

Frazier & Co., W. S., Aurora, Ill.

Goodrich Co., B. F., S. Main St., Akron, O.

Goodyear Tire & Rubber Co., Akron, O. (See page 1015.)

Hewitt Rubber Co., 240 Kensington Ave., Buffalo, N. Y.

Hickory—See Accessory Supply Co.

Hoover Bumper Mfg. Co.—See Hughson & Merton.

Hughson & Merton, 503-05 Fairbanks Bldg., Chicago, Ill. (Sole Distributors for Hoover Bumper Mfg. Co., Kalamazoo, Mich. "Twinbar.") (See page 1187.)

Industrial Rubber Goods Co., Broad St., St. Joseph, Mich. (See page 481.)

Lansing Auto Bumper Co., Lansing, Mich. "Booth."

Mechanical Rubber Co., 307 W. Randolph St., Chicago, Ill.

Mechanical Rubber Co., C. & P. & Nickel Plate R. R., Cleveland, O.

Pennsylvania Rubber Co., Jeannette, Pa.

Thermoid Rubber Co., Trenton, N. J. (See page 543.)

Twinbar—See Hughson & Merton.

Tyler Mfg. Co., 755 Boylston St., Boston, Mass. "Tymco."

Tymco—See Tyler Mfg. Co.

United States Tire Co., 1790 Broadway, New York, N. Y.

Voorhees Rubber Mfg. Co., 20-56 Bostwick Ave., Jersey City, N. J.

BURLAP, Importers of

American Bag Co., Memphis, Tenn.

Bemis Bro. Bag Co., 601-25 S. Fourth St., St. Louis, Mo.

Bemis-Indianapolis Bag Co., Indianapolis, Ind.

Central Bag Mfg. Co., 3622-30 Iron St., Chicago, Ill.

Cleveland-Akron Bag Co., Cleveland, O. (See page 101.)

Fulton Bag & Cotton Mills, 330 Wythe Ave., Brooklyn, N. Y.

Ludlow Mfg. Associates, 111 Devonshire St., Boston, Mass. (See page 1059.)

Milwaukee Bag Co., 206-20 S. Water St., Milwaukee, Wis.

Riegel Sack Co., Woolworth Bldg., New York, N. Y.

BURNER CLEANERS—See Cleaners, Acetylene Burner

BURNERS, Acetylene Lamp

Alco—See American Lava Burner Co.

American Lava Burner Co., 27 William St., Chattanooga, Tenn. "Alco."

Brilliant—See Monosmith Bros. Co.

Carroll, J. B., 3057 Carroll Ave., Chicago, Ill. "Hahn."

Colonial Mfg. Co., 711-13 E. Main St., Chattanooga, Tenn.

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TURNER TORCHES

(GASOLINE—KEROSENE)

"DOUBLE-JET" "HOT-BLAST"

OUR new line will burn either gasoline or kerosene without changing adjustment. All the trouble, since the low grade fuel has been forced upon us, we have eliminated. It was necessary to generate our present fuel sufficiently. This we have accomplished by placing a baffle in the burner tube, filled with asbestos and on which the flame is constantly applied. We have a slot in the top of the burner tube forcing the flame onto the baffle so as to generate the fuel into a hot, dry gas. (Hot dry gas takes on more air and produces more heat on less fuel.) The difficulty formerly experienced by enlarging and corroding orifices has also been overcome.

The Turner Brass Works SYCAMORE, ILLINOIS

Stewart

CUSTOM BILT **Searchlights**

Standard Model
For Open Cars $7.50
For Closed Cars $8.50

Popular Priced Model
Open and Closed Car Models $5.00

De Luxe Model
Open and Closed Car Models $15.00

No Car Complete Without Them

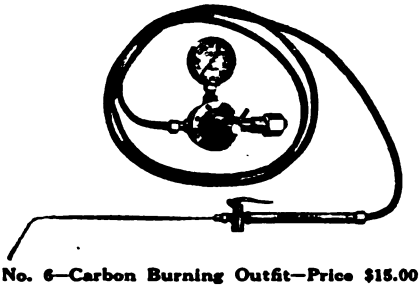
Slight increase in prices west of 100° Meridian

Stewart-Warner Speedometer Cor'n.
Chicago, U. S. A.

IMPERIAL

Carbon Burning Outfits

OXYGEN PROCESS



No. 6—Carbon Burning Outfit—Price $15.00

A Big Money Maker

Every garage should have one of these outfits. Your jobber can supply you promptly

IMPERIAL PRODUCTS include Welding, Cutting and Lead Burning Equipment, Auto Accessories, etc.

The Imperial Brass Mfg. Co.
1234 W. Harrison St., Chicago

BALL THRUST

JOURNAL ROLLER

BALL & ROLLER BEARINGS

One Bearing or One Thousand

ANNULAR

ROLLER THRUST

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THE GWILLIAM COMPANY

NEW YORK	PHILADELPHIA	BROOKLYN
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BURNERS, Acetylene Lamp (Continued)

Crescent—See Kirchberger & Co.
Hahn—See Carroll, J. B.
Imperial—See Kirchberger & Co.
Kirchberger & Co., M., 116-20 E. 27th St., New York, N. Y. "Crescent," "Perfection," "Koro," "Victory," "Stalit," "Standard American," "Imperial," "New Yankee."
Koro—See Kirchberger & Co.
Monosmith Bros. Co., 500 S. Main St., Spencer, O. "Brilliant."
New Yankee—See Kirchberger & Co.
Novelty Burner Co., Chattanooga, Tenn. "Queen Eta."
Perfection—See Kirchberger & Co.
Queen Eta—See Novelty Burner Co.
Stalit—See Kirchberger & Co.
Standard American—See Kirchberger & Co.
Tennessee Burner Mfg. Co. (East Lake), Chattanooga, Tenn. "X-L."
Victory—See Kirchberger & Co.
X.-L.—See Tennessee Burner Mfg. Co.

BURNERS, Gasoline and Kerosene

(For Steam Boilers)

Simmons, H. C., North Burlington, Vt.

BURNERS, LAMP—See Burners, Acetylene Lamp

BURNERS, Lead

Anthony Co., 138 West Ave., Long Island City, N. Y. (See page 747.)
Bastian-Blessing Co., W. Austin Ave. & La Salle St., Chicago, Ill. "Rego."
Hauck Mfg. Co., 126-34 Tenth St., Brooklyn, N. Y.
Henderson-Willis Welding & Cutting Co., 2305 N. 11th St., St. Louis, Mo.
Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)
Oxweld Acetylene Co., 3642 Jasper Pl., Chicago, Ill.
Rego—See Bastian-Blessing Co.
Superior Oxy-Acetylene Machine Co., 1102 E. High St., Hamilton, O.
Turner Brass Works, Sycamore, Ill. (See page 177.)
United States Welding Co., 120 N. First St., Minneapolis, Minn.

BURNING-IN MACHINES—See Machines, Burning-In

BURNING MACHINES, LEAD—See Machines, Lead Burning

BUSHING EXTRACTORS FOR FORDS—See Extractors, Bushing

BUSHING PULLERS FOR FORDS—See Extractors, Bushing

BUSHING REMOVERS FOR FORDS—See Extractors, Bushing

BUSHING SWEDGING PRESSES—See Presses, Bushing Swedging

BUSHINGS, BABBITT-LINED BRONZE-BACKED—See Bearings and Bushings

BUSHINGS, Bronze and Die Cast

(For Cored Bushing Bars—See Metals, Bearing; For Die Cast Bearings—See Castings, Die; For Bushing Metals—See Metals, Bearing; For Bronze-backed Babbitt-lined Bearings and Bushings—See Bearings and Bushings, Babbitt-lined Bronze-backed. Also for Bushings for Fords—See Bushings, Bronze, for Fords)

Alloy Foundry & Machine Corp., New Rochelle, N. Y.
Aluminum Manufacturers, Inc., 6205 Carnegie Ave., Cleveland, O. "Lynux."
American Bronze Corp., Berwyn, Pa. (See page opposite Inside Front Cover.
Bunting Brass & Bronze Co., 737 Spencer St., Toledo, O. (See page 295.)
Capitol Brass Works, 2306 Franklin St., Detroit, Mich.
City Brass Foundry Co., 5318 St. Clair Ave. N. E., Cleveland, O.
Cleveland Graphite-Bronze Co., Cleveland, O. (See page 179.)
Club Auto Parts & Machine Co., 204-06 Chester St., Buffalo, N. Y.
Cramp & Sons Ship & Engine Bldg. Co. William, Philadelphia, Pa. (See page 209.)
Detroit Motor Castings Co., 299-303 Beaufait Ave., Detroit, Mich.
Erie Bronze Co., 355 W. 19th St., Erie, Pa (See page 261.)
Federal Bearing & Bushing Corp., Detroit, Mich. (See page 237.)
Frontier Brass Foundry, 818 Elmwood Ave. Niagara Falls, N. Y.
G. & R. Foundry & Machine Co., 6½ St. & Penn. R. R., Terre Haute, Ind.
Gallagher's Sons, James, 87 Centre St., New York, N. Y.
Garfield Mfg. Co., Garfield, N. J.
Johnson Bronze Co., New Castle, Pa. (See page 181.)
Joppa Machine Co., 1527 N. Fawn St., Philadelphia, Pa.
Kelly Brass Works, 226 W. Ontario St., Chicago, Ill.
Limerick Co., J. Arthur, 960 N. Howard St. Baltimore, Md.
Lynux—See Aluminum Manufacturers, Inc.
Marquette Metal Products Co., 6545 Carnegie Ave., Cleveland, O.
Mill Co., D. B., Westside Ave., Jersey City N. J.
Mills Brass Co., Wm. A., Port Chester, N. Y
Milwaukee Die Casting Co., 297 Fourth St., Milwaukee, Wis. (See page 299.)
Moccasin Bushing Co., Boyce & 20th Sts. Chattanooga, Tenn.
Muzzy-Lyon Co., Detroit, Mich. (See page 111.)
Niagara Brass Mfg. Co., Lockport, N. Y.
Progressive Sheet Metal Co., 1976-84 Centre Ave., Cincinnati, O.
Regar Brass Mfg. Co., Cleveland, O. (See page 615.)
Royal Machine & Foundry Co. 388-90 Division St., Oshkosh, Wis. (See page 503.)
Sherwood Brass Works, 6331 E. Jefferson Ave. Detroit, Mich.
Smith Hardware Co., Frank F., 85 Clay St. Newark, N. J.
Standard Brass Foundry Co., 990 E. 17th St. Cleveland, O.
Sterling Specialty Co., New Comerstown, O
Superior Brass Works, Detroit, Mich. (See page 1125.)
Thiery & Kendrick Mfg. Co., Detroit Mich. (See page 419.)
United Brass & Aluminum Mfg. Co., Goulder St., Port Huron, Mich.

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Self Lubricated Graphite Bronze

Bushings
Bearings
Washers

Clutch Shaft Pilot Bearings

"Our bushings are used on 70—makes of passenger cars 50—makes of trucks, also by 25—parts manufacturers including the leaders in their respective field."

The Cleveland Graphite-Bronze Co.
Cleveland

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BUSHINGS, Bronze and Die Cast (Continued)

U. S. Hammered Piston Ring Co., 1206 S. Grove St., Irvington, N. J.

Wadell Motor Corp., 661-71 Freylinghuysen Ave., Newark, N. J.

Wagner Mfg. Co., E. R., North Milwaukee, Wis. (See page 905.)

Warner Electric Co., 2507 S. Walnut St., Muncie, Ind.

BUSHINGS, Bronze and Die Cast, for Fords

Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. (See page 81.)

Ban-Rov & Co., 2230 S. Wood St., Chicago, Ill.

Bemiller Foundry & Machine Co.—See Eckhouse & Co.

Buckeye Brass & Mfg. Co., 6410 Hawthorne Ave., Cleveland, O.

Dunham Co., Thos., Aurora, Ill. (See page 167.)

Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Factory Distributors for Bemiller Foundry & Machine Co., Belleville, O.) (See page opposite Title Page.)

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.

Freeman Brass Works, 92 Bowery, New York, N. Y.

Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass. (See page 417.)

Illinois Brass Mfg. Co., 224-30 W. Ontario St., Chicago, Ill.

Johnson Bronze Co., New Castle, Pa. (See page 181.)

Kelly Brass Works, 226 W. Ontario St., Chicago, Ill.

Martin & Anson, 2226-28 Indiana Ave., Chicago, Ill.

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

Mills Brass Co., Wm. A., Port Chester, N. Y.

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)

Niagara Brass Mfg. Co., Lockport, N. Y.

Perfection Auto Parts Co., 404 Lakeside Ave., N. W., Cleveland, O.

Royal Machine & Foundry Co., 388-90 Division St., Oshkosh, Wis. (See page 503.)

Standard Brass Foundry Co., 990 E. 67th St., Cleveland, O.

U. S. Metal Goods Co., 5211 Euclid Ave., Cleveland, O. (See page 685.)

Vulcan Die Casting Corp., 1120 W. Belden Ave., Syracuse, N. Y. (See page 1105.)

Warner Electric Co., 2507 S. Walnut St., Muncie, Ind.

Waterbury Mfg. Co., 236 Grand St., Waterbury, Conn.

Whitehouse Mfg. Co., 42 Elm St., Newark, N. J. (See page 637.)

Zagora Mfg. Co., J., 1309 S. Mint St., Charlotte, N. C.

BUSHINGS, CORK—See Washers, Cork

BUSHINGS, DIE CAST—See Bushings, Bronze

BUSHINGS, Drilling and Reaming

Wright-Fisher Bushing Corp., Holly, Mich. (See page 189.)

BUSHINGS, GRAPHITE—See Bearings, Oilless

BUSHINGS, OILLESS—See Bearings, Oilless

BUSHINGS, Spark Plug Testing

(Steel bushing or shell threaded at one end to fit spark plug opening at the other to receive the plug and containing a glass cylinder through which the operation of the plug may be observed)

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for Detroit Bushings.) (See page 275.)

Detroit Accessories Corp., Detroit, Mich. (See page 747.)

BUSHINGS, Starter or Primer Attaching

(For use on motors not equipped with pet cocks)

A. & G. Mfg. Co., West Newton, Mass.

Stryker, C. W., 240 Shonnard St., Syracuse, N. Y.

BUTTON MACHINES—See Machines, Upholstery Button

BUTTONS, HORN—See Buttons, Push

BUTTONS, Push

(Special Push Buttons for use with Electric Horns, See also Horns, Electric)

Beaver Machine & Tool Co., 625-43 N. Third St., Newark, N. J.

Benjamin Electric Mfg. Co., 806 W. Washington Blvd., Chicago, Ill. "Push-Well," "Tip Top." (See pages 181 and 517.)

General Phono Mfg. Co., Elyria, O. (See page 189.)

Handy Products Co., Erie Bldg., Cleveland, O.

Manhattan Electrical Supply Co., 17 Park Pl., New York, N. Y.

Pushwell—See Benjamin Electric Mfg. Co.

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco."

Tip Top—See Benjamin Electric Mfg. Co.

BUTTONS, Special Horn, for Fords

(Designed to put horn control in a more accessible position by attaching to steering wheel column, etc.)

Aerofram Co., 107 Massachusetts Ave., Boston, Mass. "Nu-Way."

Anco Mfg. Co., Providence, R. I.

Buzzi-Nut Mfg. Co., Sunny Slope Station, Kansas City, Mo.

Handy Products Co., Erie Bldg., Cleveland, O.

Nu-Way—See Aerofram Co.

BUTTONS, Upholstery

Atlas Tack Corp., Fairhaven, Mass.

Auto-Vehicle Parts Co., 2301 Colerain Ave., Cincinnati, O. "Auvsco."

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Buttons are made in a variety of styles and mountings to care for all requirements. Flush-type style may be used also for door-bells and call systems, as well as for automobiles.

The several types shown for spark-advance levers are used by the prominent steering-column manufacturers as standard equipment.

8106 C
Steering-Wheel Mounting

8106 B
Fore-Door Mounting

.620
8216 A
Split-Type Lever Mounting

.995
8124 A
Steering-Column Mounting

BENJAMIN PRODUCTS

also include an extensive line of automobile and motorcycle horns, as well as garage lighting equipment and industrial signals.

Write for our descriptive booklet.

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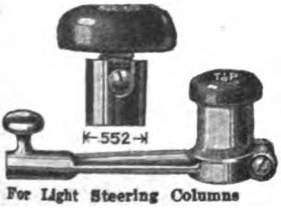
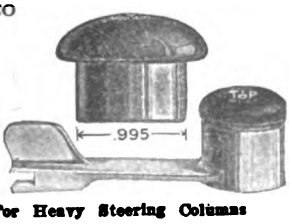
NEW YORK SAN FRANCISCO



For Light Steering Columns

8189 F
Surface Mounting



For Heavy Steering Columns

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BUTTONS, Upholstery (Continued)

Auveco—See Auto-Vehicle Parts Co.

Landers Bros. Co., Dept. A2, Toledo, O. (See page 605.)

Lounsbery & Sons, G. H., 107-09 W. Third St., Cincinnati, O.

Milonite—See Morley Button Mfg. Co.

Monarch Carriage Goods Co., Cincinnati, O. (See page 407.)

Morley Button Mfg. Co., 120 Boylston St., Boston, Mass. "Milonite."

Neider Co., F. A., Augusta, Ky.

Tockwotton Co., 79 S. Main St., Providence, R. I.

United Button Co., Union St., Easthampton, Mass.

White Co., L. C., 214 Bank St., Waterbury, Conn.

CABINET LOCKS—See Locks, Cabinet and Pad

CABINETS, Accessory

(See also Cases, Bolt and Screw)

Miller Brothers, Lewisburg, Pa. (See page 183.)

CABINETS, BOLT AND SCREW — See Cases, Bolt and Screw

CABINETS, FIRST AID—See Cases, Medical Emergency

CABINETS, GREASE—See Guns, Portable Garage Grease

CABLE, Flexible Control

Bowden—See Gwilliam Co.

Gwilliam Co., 23 Flatbush Ave., Brooklyn, N. Y. "Bowden." (Dealer.) (See page 177.)

CABLE, IGNITION—See Wire, Insulated

CABLE, WIRE—See Rope, Bronze Wire; also Rope or Cable, Steel Wire

CABS, Metal Truck

Ames Co., F. A., 401 W. Fourth St., Owensboro, Ky.

Anthony Co., Streator, Ill. (See page 129.)

Brummeler-Ruggles Metal Products Co., 1215 Ionia Ave., S. W., Grand Rapids, Mich.

Continental Trailer Corp., 3625 Superior St., Detroit, Mich.

Field Body Corp., Owosso, Mich. (See page 141.)

Hannibal Truckbody Co., 1001 Collier St., Hannibal, Mo.

Highland Body Mfg. Co., 716 Elmwood Pl., Cincinnati, O.

Model Body Corp., 3261 Bellevue Ave., Detroit, Mich.

Sheet Steel Products Co., Michigan City, Ind. (See page 183.)

Spaulding Mfg. Co., 933 Spring St., Grinnell, Iowa.

Stewart Iron Works Co., Cincinnati, O.

CABS, Wood Truck

A. B. C.—See Clippinger & Sons Mfg. Co.

Abingdon Wagon Co., Abingdon, Ill.

Ames Co., F. A., 401 W. Fourth St., Owensboro, Ky.

Armstrong-Johnston Mfg. Co., W. First Ave. & Perry St., Columbus, O.

Auto Products Co., Station H, Cincinnati, O. (See page 1193.)

Automotive Manufacturers' Associates, 14th & Farnam Sts., Omaha, Nebr. (Sales Representatives for Badger Auto Body Co., Milwaukee, Wis.)

Babcock Co., H. H., Watertown, N. Y. (See page 133.)

Badger Auto Body Co.—See Automotive Manufacturers Associates.

Badger Mfg. Co., Eighth & M Sts., Lincoln, Neb. "Havlock."

Clark Mfg. Co., J. L., Oshkosh, Wis.

Clippinger & Sons Mfg. Co., A. B., 1100 S. Mill St., Kansas City, Kans. "A. B. C."

Commercial Auto Body Co., 16th & Pine Sts., St. Louis, Mo. (See page 151.)

Detroit Weatherproof Body Co., 600 S. Saginaw St., Pontiac, Mich.

Eagle Wagon Works, 45 S. Division St., Auburn, N. Y.

Express Body Corp., 332 S. Michigan Ave., Chicago, Ill.

Fitz John-Erwin Mfg. Co., Muskegon, Mich.

General Woodwork Co., 1225-35 Budd St., Cincinnati, O.

Graves Co., L. C., Springboro, Pa.

H. & M. Body Corp., 608 Center St., Racine, Wis.

Hall Air Lock & Railway Supply Co., Oakville, Iowa.

Kennedy Cab & Body Co., Lewis Bldg., Minneapolis, Minn.

Koenig & Luhrs Wagon Co., 320 S. Sixth St., Quincy, Ill.

Lansing Body Co., 504 No. Grand Ave., Lansing, Mich.

Metropolitan Body Co., 430-34 Grand St., Bridgeport, Conn.

Model Body Corp., 3261 Bellevue Ave., Detroit, Mich.

Novelty Carriage Works, 813 Second Ave., Spokane, Wash.

Proctor-Keefe Co., 7741 Dix Ave., Detroit, Mich.

Sisman Co., Andrew C., 1221 Beaufait Ave., Detroit, Mich.

Southern Motor Mfg. Association, Beatty Bldg., Houston, Tex.

Standard Body Co., 934 Lowe St., Appleton, Wis.

Steffen-Van Steenwyk Co., 619 W. Seventh St., Sioux City, Ia.

Stunkard Bros., 24-26 N. Meridian St., Brazil, Ind.

Walker & Werner, 207-13 Fayette St., Peoria, Ill.

CAGE REMOVING TOOLS—See Tools, Valve Cage Removing

CALCIUM CARBIDE—See Carbide, Calcium.

CALIPERS and DIVIDERS

(For Micrometer Calipers—See Micrometers)

A. M. C.—See Athol Machine Co.

Athol Machine Co., Athol, Mass. "Premier." "A. M. C."

Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.

Columbia—See Smith, E. G.

Consolidated Tool Works, 261 Broadway, New York, N. Y. "Pilot."

Copelands—See Eagan, Thos. F.

Eagan, Thos. F., 8 Blithwood Ave., Worcester, Mass. "Copelands."

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The Miller Electric Bulb, Fuse and Brush Cabinet. Price $15.00, F.O.B.

Dealers' twin necessities. They keep a complete stock of Spark Plugs, Bulbs, etc., instantly available and always conspicuously before customers passing in and out of the store.

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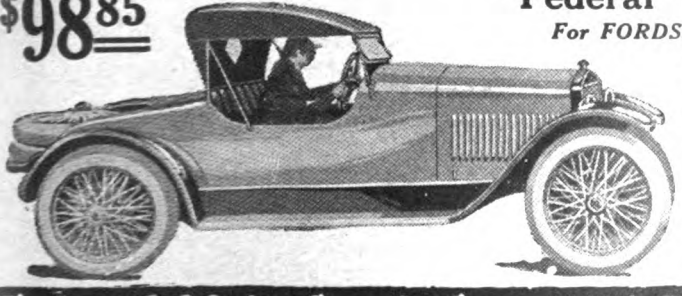
For FORDS and CHEVROLET



Here is something entirely new in body equipment. Rear cut out for two tires' carrying space, built on the principle of high priced cars.

Dealers write for "FEDERALIST" of high grade speed bodies and automotive equipment.

Territory Open for Live Dealers

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CALIPERS and DIVIDERS (Continued)

Fay—See Starrett Co.
Goodell-Pratt Co., Greenfield, Mass.
Meigs-Powell Co., 522 16th Ave., Milwaukee, Wis.
Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."
Pexto—See Peck, Stow & Wilcox Co.
Pilot—See Consolidated Tool Works.
Premier—See Athol Machine Co.
Smith, E. G., 315 W. Park Ave., Tampa, Fla. "Columbia."
Starrett Co., L. S., Athol, Mass. "Fay," "Yankee."
Union Tool Co., 48 E. River St., Orange, Mass.
Yankee—See Starrett Co.

CAM CUTTING MACHINES — See Machines, Cam Cutting

CAMSHAFT ALIGNING JIGS—See Reamers and Jigs, Camshaft Aligning for Fords

CAMSHAFT ALIGNING REAMERS—See Reamers and Jigs, Camshaft Aligning for Fords

CAM-SHAFT BEARING PARTING TOOLS FOR FORDS—See Tools, Cam-Shaft Bearing Parting

CAM-SHAFTS, Finished or Machined

(For Cam-Shafts in the rough—See Forgings, Drop)

Accuratime—See Muskegon Motor Specialties Co.
Cleveland Camshaft Co., 6520 Carnegie Ave., Cleveland, O.
Commercial Machine Co., 31-33 W. Front St., Dunkirk, N. Y.
Gordon Mfg. Co., L. O., Muskegon, Mich. (See page 353.)
Jackson Motor Shaft Co., Jackson, Mich. (See page 187.)
Muskegon Motor Specialties Co., Muskegon, Mich. "Accuratime." (See page 185.)
Savage Arms Corp., Sharon, Pa.
Union Switch & Signal Co., Swissvale, Pa.
Universal Parts Co., 325 Mt. Vernon Ave., Columbus, O. (See page 1207.)
Wyman-Gordon, Worcester, Mass. (See Back Bone.)

CAM-SHAFTS, Special, for Fords

Green Engineering Co., Main St. & Burns Ave., Dayton, O.
Noonan Mfg. Co., D. R., Paris, Ill.

CAMERAS, Aircraft

Ansco Co., Washington St., Binghamton, N. Y.
Bausch & Lomb Optical Co., St. Paul & Smith Sts., Rochester, N. Y.
Eastman Kodak Co., Rochester, N. Y.
Fairchild Aerial Camera Corp., 17 W. 42d St., New York, N. Y.
G. E. M. Engine Co., 1216 Walnut St., Philadelphia, Pa.
Herbert & Heusgen Co., 18 E. 42d St., New York, N. Y.

CAMP OUTFITS — See Hampers; also Stoves, Camp; also Tents

CAMP STOVES—See Stoves, Camp

CAN HOLDERS—See Holders or Tippers, Oil Can

CAN TIPPERS—See Holders or Tippers, Oil Can

CANOPIES, Tractor

Hughes & Curren Co., 45 Halstead (Brighton Sta.), Rochester, N. Y. "Motoline."
Motoline—See Hughes & Curren Co.
Otwell Tractor Equipment Co., 1538 Livernois Ave., Detroit, Mich.
Weis Mfg. Co., Henry, Atchison, Kans. "Weisteel."
Weisteel—See Weis Mfg. Co.

CANS, Gasoline

(For Garage Use)

American Can Co., 120 Broadway, New York, N. Y. "Canco."
Atlantic Stamping Co., 180 Ames St., Rochester, N. Y.
Boyle Mfg. Co., Los Angeles, Cal. (See page 1189.)
Canco—See American Can Co.
Central Stamping Co., 172-74 Fulton St., New York, N. Y.
Delphos Mfg. Co., 100-24 S. Pierce St., Delphos, O.
Diener Mfg. Co., Geo. W., 400-20 Monticello
Dover Stamping & Mfg. Co., 385 Putnam Ave., Cambridge, Mass. (See page 433.)
Justrite Mfg. Co., 2061-81 Southport Ave., Chicago, Ill.
Kompact—See Vogel & Bros.
McNutt Can Sales Co., 83 Chambers St., New York, N. Y.
National Enameling & Stamping Co., 413 Fifth Ave., New York, N. Y.
Non-Explosive Can & Tube Co., 127-29 S. Green St., Chicago, Ill.
Protection—See Diener Mfg. Co.
Sexton Can Co., 123 Broad St., Boston, Mass.
Vogel & Bros., William, Brooklyn, N. Y. "Kompact." (See page 433.)

CANS, Oiling

(For Oil Guns—See Guns, Oil)

All-Way—See Famasco Distributing Co.
Ansonia Novelty Co., Ansonia, Conn. "Richard."
Automotive Exchange of America, Hippodrome Annex, Cleveland, O. "Ducky." (See page 725.)
Beacon—See Mooers-Wright Co.
Brown Stamping Co., Toledo, O.
Cannon Oiler Co., Keithsburg, Ill.
Delphos Mfg. Co., 100-24 S. Pierce St., Delphos, O.
Dover Stamping & Mfg. Co., 385 Putnam Ave., Cambridge, Mass. (See page 433.)
Ducky—See Automotive Exchange of America Co.
Eagle Mfg. Co., Wellsburg, W. Va.
Famasco Distributing Co., 694 Main St., Buffalo, N. Y. (Sole Distributors for U. S. All-Way Oiler Co., Waterbury, Conn. "All-Way." (See page 433.)
Gem Mfg. Co., Goebel & Fulton Sts., Pittsburgh, Pa.
Hero Mfg. Co., 23rd & Westmoreland Sts., Philadelphia, Pa.
Kompact—See Vogel & Bros.
Lidseen, 832-40 S. Central Ave., Chicago, Ill. (See page 189.)
Maple City Stamping Co., 710 Park Ave., Peoria, Ill.

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The Result of Intensive Specialization.

WE are equipped to build any type of integral cam shaft; from the one cylinder shafts with single inlet and exhaust cam to the twelve cylinder "V" type with twenty-four cams; lengths ranging from 4 to 72 inches.

NUMBER OF CYLINDERS					
1 Cyl.	2 Cyl.	4 Cyl.	6 Cyl.	8 Cyl.	12 Cyl.
Farm Lighting Equipment. Stationary Heavy Duty Marine	Tractor Marine	Passenger Truck Tractor Marine	Passenger Marine Aircraft	Passenger both "V" type and Straight Marine Aircraft	"V" type for Passenger Aircraft Marine

The cam contours may be made in practically any shape suited to any kind of tappet, either roller, flatfoot, mushroom or shoe.

For the purpose of oiling and weight reduction, a hole is often required running the entire length of shaft and these holes may vary ½" to 1" diameter.

In addition to ordinary lathe and grinding operations of the perfectly plain cam shaft, any one, or a combination of the following, may be incorporated on the shaft:

Eccentrics — Keyways — Splines — Cross Holes
Reamed Holes — Threads — Helical Gears — Flanges
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Muskegon, Michigan

Detroit Office
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Telephone, Cherry 5967

Chicago Office
14 E. Jackson Blvd.
Telephone, Harrison 5957

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CANS, Oiling (Continued)

Moores-Wright Co., 1400 Broadway, New York, N. Y. "Beacon." (See page 1167.)
Noera Mfg. Co., 21-97 Griggs St., Waterbury, Conn.
Richard—See Ansonia Novelty Co.
Thiem—See Metal Products Mfg. Co.
U. S. All-Way Oiler Co.—See Famasco Distributing Co.
Vogel & Bros., William, Brooklyn, N. Y. "Kompact." (See page 433.)
Wall Mfg. Supply Co., P., 720 Preble Ave., Pittsburgh, Pa.
Walters Mfg. Co., Fulton Bldg., Pittsburgh, Pa.

CANS, Waste

(Receptacles for oily and dirty waste)

Acme Sheet Metal & Mfg. Co., 2343 Lakeside Ave., Cleveland, O.
Angle Steel Stool Co., Otsego, Mich.
Atlantic Stamping Co., 180 Ames St., Rochester, N. Y.
Boyle Mfg. Co., Los Angeles, Cal. (See page 1189.)
Central Stamping Co., 172-74 Fulton St., New York, N. Y.
Cleveland Wire Spring Co., 1281 E. 38th St., Cleveland, O.
Delphos Mfg. Co., 100-24 S. Pierce St., Delphos, O.
Diamond State Fibre Co., Bridgeport, Pa.
Diener Mfg. Co., Geo. W., 400-20 Monticello Ave., Chicago, Ill. "Protection."
Dover Stamping & Mfg. Co., 385 Putnam Ave., Cambridge, Mass. (See page 433.)
Durlach Can & Iron Works, 234 Bridge St., Brooklyn, N. Y.
Gem Stamped Steel Co., 16 Beach St., Everett, Mass.
Justrite Mfg. Co., 2061-81 Southport Ave., Chicago, Ill.
Koven & Bro., L. O., Jersey City, N. J.
Kraft, A. C., 323-25 W. Lake St., Chicago, Ill "Nacefas."
McNutt Can Sales Co., 83 Chambers St., New York, N. Y.
Nacefas—See Kraft, A. C.
Protection—See Diener Mfg. Co.
Sexton Can Co., 123 Broad St., Boston, Mass.
Solar Metal Products Co., 470 E. Starr Ave., Columbus, O.
Vogel & Bros., William, Brooklyn, N. Y. (See page 433.)
Wall Mfg. Supply Co., P., 720 Preble Ave., Pittsburgh, Pa.
Walters Mfg. Co., Fulton Bldg., Pittsburgh, Pa.

CANTILEVER SPRING SUPPORT CLAMPS—See Clamps, Special Cantilever Spring Support

CANVAS BUCKETS—See Buckets, Collapsible

CANVAS SHIPPING COVERS—See Covers, Paper and Canvas Shipping

CAP LOCKS, RADIATOR—See Locks, Radiator Cap and Thermometer

CAP SCREWS—See Screws, Cap

CAPE CHISELS—See Chisels, Cold and Cape

CAPE TOPS—See Tops, Automobile

CAPS, BRASS RADIATOR—See Caps Brass Radiator and Tank

CAPS, COMPOSITION RADIATOR—See Caps, Rubber or Composition Radiator

CAPS, GASOLINE TANK—See Caps, Brass Radiator and Tank

CAPS, Gasoline Tank, for Fords

(Including both standard and special caps)

Freeman Brass Works, 92 Bowery, New York N. Y.
Illinois Brass Mfg. Co., 324-30 W. Ontario St. Chicago, Ill.

CAPS, Hub

(Pressed or Stamped Caps; for Cast Caps—See Castings)

Aluminum Goods Mfg. Co., 15th & Franklin Sts., Manitowoc, Wis.
American Brass Co., Waterbury, Conn. (See page 165.)
Bassick Co., Bridgeport, Conn. (See page 333.)
Bettcher Stamping & Mfg. Co., 3106 W. 61st St., Cleveland, O. (See page 361.)
Bossert Corp., Utica, N. Y. (See page 897.)
Bridgeport Brass Co., Bridgeport, Conn. (See page 907.)
Brown Mfg. Co., Jno. W., Columbus, O. (See page 547.)
Buffalo Pressed Steel Co., Buffalo, N. Y. (See page 655.)
Crosby Co., Buffalo, N. Y. (See page 899.)
Kelsey Wheel Co., Detroit, Mich. (See page 1063.)
Konigslow Mfg. Co., Otto E., 3501 Perkins Ave., Cleveland, O.
Lindholm Metal Stamping Co., 107-15 Erie St., Camden, N. J.
Maryland Metal Products Co., Hagerstown, Md.
Matthews Mfg. Co., H. A., Seymour, Conn.
Modern Tool & Stamping Co., 311-17 S. Clinton St., Chicago, Ill.
Pfau Mfg. Co., Cincinnati, O.
Pressed Steel Co., Luzerne St., Wilkes-Barre, Pa. (See page 903.)
Sterling Sales Co., Auburn, Ind. "Sterlite."
Sterlite—See Sterling Sales Co.
Torrey Roller Bushing Works, Bath, Me.
Waterbury Mfg. Co., 236 Grand St., Waterbury, Conn.
Worcester Pressed Steel Co., Worcester, Mass. (See page 919.)
Worcester Stamped Metal Co., Worcester, Mass. (See page 1019.)

CAPS, Hub, for Fords

(Including both standard and special caps)

A-K—See Angsten Kox Co.
Angsten Kox Co., 221-23 W. Randolph St., Michigan City, Ind.
Becco—See Michigan Motor Specialties Co.
Bowen Products Corp., Auburn, N. Y. "Empress." (See page 331.)
Brown Mfg. Co., Jno. W., Columbus, O. (See page 547.)

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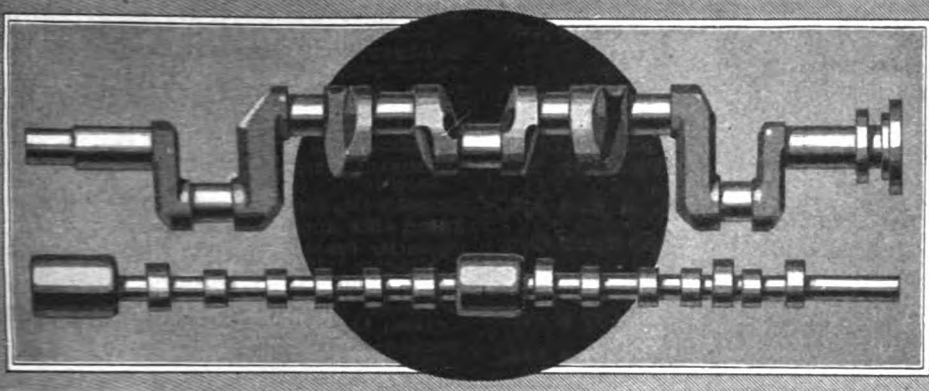

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If you require finished crankshafts and camshafts in large quantities with dependable and consistent shipments, know we can be of service to you.

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CAPS, Hub, for Fords (Continued)

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.
Empress—See Bowen Products Corp.
Freeman Brass Works, 92 Bowery, New York, N. Y.
Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass. (See page 417.)
Hyman & Co., Henry, 476 Broadway, New York, N. Y.
Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.
Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich.
Michigan Motor Specialties Co., 120 Mt. Elliott Ave., Detroit, Mich. "Becco."
Modern Tool & Stamping Co., 311-17 S. Clinton St., Chicago, Ill.
Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)
Ospeco—See Michigan Auto Products Co.
Republic Auto Parts Co., 31-35 Tenth St., Long Island City, N. Y. "Sterling."
Sager Co., J. H., 36-38 S. Water St., Rochester, N. Y.
Sterling Sales Co., Auburn, Ind. "Sterlite."
Sterlite—See Sterling Sales Co.
Sterling—See Republic Auto Parts Co.
U. S. Metal Goods Co., 5211 Euclid Ave., Cleveland, O. (See page 685.)
Vulcan Die Casting Corp., 1120 W. Belden Ave., Syracuse, N. Y. (See page 1105.)
Whitehouse Mfg. Co., 42 Elm St., Newark, N. J. (See page 637.)

CAPS, Motorists

(See also Clothing, Motorists)

Bishop Co., J. H., Wyandotte, Mich.
Bradley Knitting Co., Delevan, Wis.
Dinner Co., Isaac H., 694 Washington St., Boston, Mass.
Favorite Knitting Mills, 1388 W. Sixth St., Cleveland, O.
Forman & Co., E., 573 Washington St., Boston, Mass.
Freeman, David, 226 W. Van Buren St., Chicago, Ill.
Gilbert Mfg. Co., 358 York St., New Haven, Conn.
Hendrickson Hat Co., A. P., 127-29 S. Meridian St., Indianapolis, Ind.
Kaplan, Frank, & Dunn, 113-15 University Pl., New York, N. Y.
Lasky & Levy, 394 Broadway, New York, N. Y.
Patrick-Duluth Woolen Mills, Duluth, Minn.
Pontiac Knitting Co., Pontiac, Mich.
Revillon Freres, 19 W. 34th St., New York, N. Y.
Spear & Co., Woodhaven, N. Y.

CAPS, NON-EXPLOSIVE TANK-FILLING —See Tubes, Non-Explosive Tank-Filling

CAPS, Brass Radiator and Tank

Alco—See American Insulator Co.
Albany Billiard Ball Co., Delaware Ave. & Whitehall Rd., Albany, N. Y.
American Brass Co., Waterbury, Conn. (See page 165.)
American Insulator Corp., New Freedom, Pa. "Alco." (See page 913.)
Attwood Brass Works, Grand Rapids, Mich. (See page 1195.)
Auto Ball Cock Co., Hazleton, Pa.
Autoware Corp., 441 State St., Detroit, Mich. "Dann."
Bridgeport Brass Co., Bridgeport, Conn. (See page 907.)
Bush Mfg. Co., Hartford, Conn. (See page 797.)
Cloud Accessories Corp., 1408 S. Wabash Ave., Chicago, Ill.
Columbus Brass Co., 540 Dublin Ave., Columbus, O.
Crosby Co., Buffalo, N. Y. (See page 899.)
Dann—See Autoware Corp.
Frontier Brass Foundry, 818 Elmwood Ave., Niagara Falls, N. Y.
Garfield Mfg. Co., Garfield, N. J.
Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)
National Gauge & Equipment Co., La Crosse, Wis. (See 437.)
Niagara Brass Mfg. Co., Lockport, N. Y.
Pfau Mfg. Co., Cincinnati, O.
Rust Mfg. Co., 1201 Fourth St., S., Minneapolis, Minn.
Scoville Mfg. Co., Waterbury, Conn. (See page 845.)
Waterbury Mfg. Co., 236 Grand St., Waterbury, Conn.
Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

CAPS, Radiator, for Fords

(Including both standard and special caps)

Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. (See page 81.)
Attwood Brass Works, Grand Rapids, Mich. (See page 1195.)
Auto Ball Cock Co., Hazleton, Pa.
Bergwald Mfg. Co., 21-33 E. Fourth St., New York, N. Y.
Bowen Products Corp., Auburn, N. Y. "Empress." (See page 331.)
Corcoran Mfg. Co., Section & Foraker Aves., (Norwood), Cincinnati, O. "Peerless."
Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.
Empress—See Bowen Products Corp.
Ezyfill—See Walker Mfg. Co.
Fracto Specialty Co., 161 Massachusetts Ave., Boston, Mass.
Freeman Brass Works, 92 Bowery, New York, N. Y.
Frontier Brass Foundry, 818 Elmwood Ave., Niagara Falls, N. Y.
Goodrich-Lenhart Mfg. Co., Hamburg, Pa. (See page 721.)
Home Light Co., 3351 Milwaukee Ave., Chicago, Ill.
Illinois Brass Mfg. Co., 324-30 W. Ontario St., Chicago, Ill.
King—See Palmyra Mfg. Co.
Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.
Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich.
Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)
Niagara Brass Mfg. Co., Lockport, N. Y.
Palmyra Mfg. Co., Palmyra, Pa. "King."
Peerless—See Corcoran Mfg. Co.
Service Mfg. Co., 211-13 Center St., New York, N. Y.
Stout's Mfg. Co., Lockport, N. Y. (See page 1065.)
Vulcan Die Casting Corp., 1120 W. Belden Ave., Syracuse, N. Y. (See page 1105.)

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The Great Automobile and Truck Oil Can

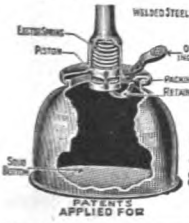
WILL OIL OVER-HEAD OR BELOW

The Lidseen

POSITIVE FORCE FEED OILERS

They cannot clog at spout, welded spouts, large opening for filling made of heavy drawn steel. Its force feed action forces oil in difficult places.

36 numbers, 4" to 18" Spouts, ⅓ pint to 1 quart in capacity



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832-840 So. Central Ave.
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2,000,000 in use

In appearance this button has the automobile look of simplicity, strength and reliability.

The button itself is large and get-at-able, but there is no unnecessary bulk, in fact, it is about all-button. Retails for 30c.

Write us today for price in quantity.

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Formerly Named
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There's a WRIGHT-FISHER STANDARDIZED BUSHING for every type of drilling and reaming jig work. They are ready for instant use without additional grinding and lapping. Progressive manufacturers carry them in stock the same as drills and reamers.

Made from the finest tool steel obtainable, with metallurgical control of heat treatment, an unvarying hardness of 80 to 90 degrees Scleroscope is secured—ensuring unusual uniformity and long wearing qualities.

Each WRIGHT-FISHER STANDARDIZED BUSHING is exact to .0003", making interchangeability and replacement of worn bushings positive, convenient and extremely economical.

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DETROIT
Branch Offices and Stock Rooms in Principal Cities

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CAPS, Radiator, for Fords (Cont'd)

Walker Mfg. Co., Hamilton & Michigan Sts., Racine, Wis. "Ezyfill."

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

Whitehouse Mfg. Co., 42 Elm St., Newark, N. J. (See page 637.)

CAPS, Rubber or Composition Radiator

American Hard Rubber Co., 11 Mercer St., New York, N. Y.

Belden Mfg. Co., 2300 South Western Ave., Chicago, Ill. (See page 1171.)

Continental Rubber Works, 1902 Liberty St., Erie, Pa. "Vitalic."

General Insulate Co., 1008 Atlantic Ave., Brooklyn, N. Y.

International Insulating Corp., ft. Mechanic St., Springfield, Mass.

Luzerne Rubber Co., Muirhead Ave., Trenton, N. J.

Mechanical Rubber Co., C. & P. & Nickel Plate R. R., Cleveland, O.

Niagara Insul-Bake Specialty Co., 483-93 Delaware Ave., Albany, N. Y.

Pouvailsmith Corp., Smith St., Poughkeepsie, N. Y. "Povasco."

Povasco—See Pouvailsmith Corp.

Stokes Rubber Co., Jos., Taylor St., Trenton, N. J.

Vitalic—See Continental Rubber Works.

CAPS, TANK—See Caps, Brass Radiator

CAPS, TANK, FOR FORDS—See Caps, Gasoline Tank

CAR BEDS—See Beds or Berths, Car

CAR BERTHS—See Beds or Berths, Car

CAR LOADERS—See Loaders, Truck

CAR RAISING SKIDS—See Skids, Car Raising

CAR SHIPPING BLOCKS—See Chocks, Blocks and Clamps, Car Shipping

CAR SHIPPING CHOCKS—See Chocks, Blocks and Clamps, Car Shipping

CAR SHIPPING CLAMPS—See Chocks, Blocks and Clamps, Car Shipping

CAR WASHING BRUSHES—See Washers, Vehicle

CAR WIRING CONDUITS—See Conduit, Flexible Car Wiring

CARBIDE, Calcium

American Carbolite Sales Co., 301 S. 55th Ave., W., Duluth, Minn. "Carbolite."

Carbolite—See American Carbolite Sales Co.

Union Carbide Sales Co., 122 S. Michigan Blvd., Chicago, Ill.

CARBON BURNING OUTFITS—See Machines, Motor Decarbonizing

CARBON REMOVERS — See Compounds, Carbon; also Machines, Motor Decarbonizing; also Removers, Carbon; also Moisteners, Air or Mixture; also Scrapers, Carbon

CARBON REMOVING COMPOUNDS—See Compounds, Carbon Removing

CARBON REMOVING MACHINES — See Machines, Engine Decarbonizing

CARBON SCRAPERS—See Scrapers, Carbon

CARBONIA FINISH—See Treating, Heat

CARBORUNDUM PAPER — See Paper, Emery and Sand

CARBORUNDUM WHEELS—See Wheels, Grinding

CARBURETOR CONTROLS—See Controls, Dash and Steering Column Carburetor

CARBURETOR CONTROLS FOR FORDS —See Controls, Dash Carburetor

CARBURETOR FLOATS—See Floats

CARBURETOR INTAKE STRAINERS—See Cleaners, Air

CARBURETOR REGULATORS FOR FORDS — See Regulators, Thermostatic Carburetor

CARBURETORS, Aircraft Gasoline

Beneke & Kropf Mfg. Co., 2559 W. 21st St., Chicago, Ill. "Rayfield." (See page 193.)

Byrne, Kingston & Co., Kokomo, Ind. "Kingston." (See page 197.)

Camden-Anchor Rockland Machine Co., Camden, Me. "Knox."

Claudel Carburetor Co., 192 Jackson Ave., Long Island City, N. Y. (See page 199.)

Flechter & Co., L. V., 192 Jackson Ave., Long Island City, N. Y. (See page 195.)

Holtzer-Cabot Electric Co., 125 Armory St., Boston, Mass. "Newcomb."

Kingston—See Byrne, Kingston & Co.

Knox—See Camden-Anchor Rockland Machine Co.

Marvel Carburetor Co., Flint, Mich. (See pages 931 and 1173.)

Master Carburetor Co., Los Angeles, Cal. (See page 1165.)

Miller Mfg. Co., Harry A., 17th & S. Los Angeles Sts., Los Angeles, Cal. (See page 699.)

Newcomb—See Holtzer-Cabot Electric Co.

Penberthy Injector Co., 1242 Holden Ave., Detroit, Mich.

Rayfield—See Beneke & Kropf Mfg. Co.

Schebler — See Wheeler-Schebler Carburetor Co.

Shain, Chas. D., Brooklyn, N. Y.

Shakespeare Co., Kalamazoo, Mich.

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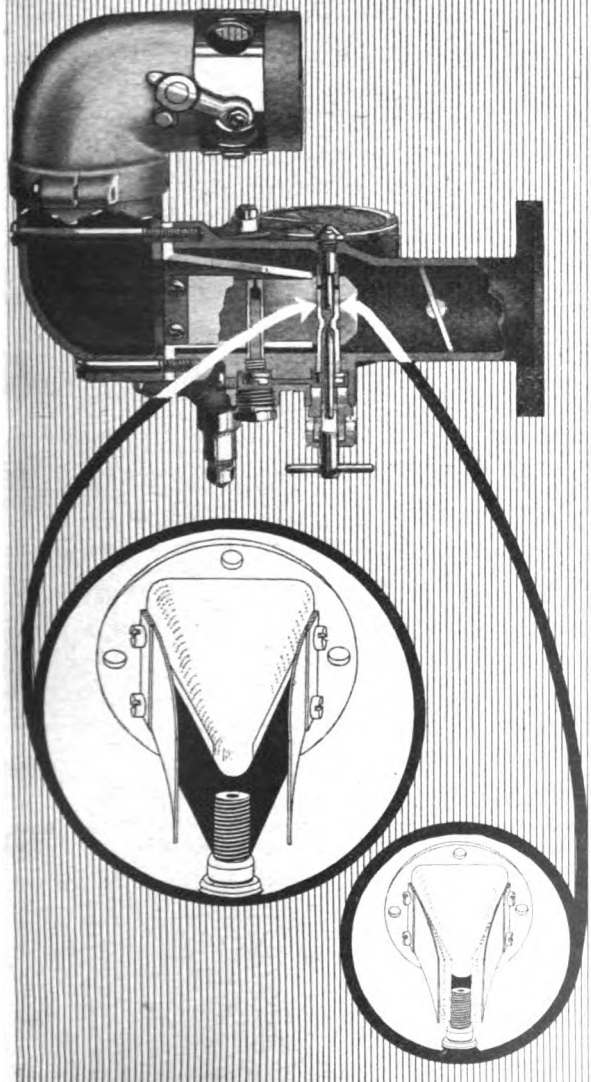
Tillotson
CARBURETOR



Automatic Air Valve

The Tillotson air valve is set primarily to equal the requirements of the motor at idling speed with the throttle closed. From that fixed point the air valve automatically responds to all throttle ranges and maintains a uniform mixture that insures the highest motor efficiency at all engine speeds.

The Tillotson Carburetor is flexible and positive in its delivery of the correct mixture necessary to develop utmost power.

It represents a scientific achievement no less than it does a practical solution of carburetion problems.

Let us confer with you on your requirements.

The Tillotson Mfg. Co.
TOLEDO, OHIO

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CARBURETORS, Aircraft, Gasoline (Continued)

Stromberg Motor Devices Co., Dept. 120, 64 E. 25th St., Chicago, Ill. (See page 195.)

Sunderman Corp., Newburgh, N. Y. (See page 193.)

Van Briggle Motor Device Co., 1506 N. Capitol Ave., Indianapolis, Ind.

Webber Mfg. Co., 66-68 Stanhope St., Boston, Mass.

Wheeler-Schebler Carbureter Co., Indianapolis, Ind. "Schebler." (See page 199.)

Zenith Carburetor Co., Detroit, Mich. (See page 195.)

CARBURETORS, Gasoline

(For Mixing Valves or Vaporizers—See Vaporizers)

Aero Products Co.—See Gill Mfg. Co.

Air-Friction Carburetor Co., First & Madison Sts., Dayton, O.

American Auto Products Co., 240-44 S. Broadway, Denver, Colo. "J. B. J. Metro."

Atkins Co., E. G., 26 E. Sixth St., Mansfield, O.

Automatic Steam Carburetor Co., 2488-98 Milwaukee Ave., Chicago, Ill.

Ball Spray—See Shain, Chas. D.

Beneke & Kropf Mfg. Co., 2559 W. 21st St., Chicago, Ill. "Rayfield." (See page 193.)

Bennett—See Wilcox-Bennett Carburetter Co.

Booty Carburetor Mfg. Co., 3254 S. Michigan Ave., Chicago, Ill.

Brandenburg Bros. & Eccleston, 1112 S. Michigan Ave., Chicago, Ill. (Sole Distributors for McFell Signal Co., Chicago, Ill. "Gilles.")

Briscoe Devices Co., Pontiac, Mich. "Scoe."

Brown Carburetor Co., 347 Madison Ave., New York, N. Y.

Byrne, Kingston & Co., Kokomo, Ind. "Kingston." (See page 197.)

Camden Anchor-Rockland Machine Co., Camden, Me. "Knox."

Cammen Laboratories Co., 42 W. 39th St., New York, N. Y. "Jetajet."

Caloretor—See Vaporator Corp.

Carter Carburetor Co., 2838-40 N. Spring Ave., St. Louis, Mo.

Claudel Carburetor Co., 192 Jackson Ave., Long Island City, N. Y. (See page 199.)

Columbia Carburetor Co., Harris Trust Bldg., Chicago, Ill.

D. K. W.—See Duquesne Auto Accessory Co.

Daley, Walter A., 3520 Melrose St., Chicago, Ill.

Detroit Lubricator Co., 5842-5986 Trumbull Ave., Detroit, Mich. "Stewart."

Douglas Auto-Appliance Co., 2845 Chicago Ave., Minneapolis, Minn. (See page 483.)

Duquesne Auto Accessory Co., New Kensington, Pa. "D. K. W."

Eagle Carbureter Co., 11502 Madison Ave., N. W., Cleveland, O.

Ensign Carburetor Co., 217 E. 17th St., Los Angeles, Cal.

Ess-Ess—See Scott & Sons Co.

Flechter & Co., L. V., 192 Jackson Ave., Long Island City, N. Y. (See page 195.)

Fulton-Greuter Engineering Co., Sixth Ave. & Baymiller St., Cincinnati, O.

G. & A. Carburetor Co., 105-07 E. 12th St., New York, N. Y.

Gardner Auto Products Co., Detroit, Mich. (Sole Distributors for Gardner Carburetor & Brass Works, Detroit, Mich.) (See page 239.)

Gardner Carburetor & Brass Works—See Gardner Auto Products Co.

Gill Mfg. Co., 8301 S. Chicago Ave., Chicago Ill. (Sole Distributors for Aero Products Co., Cleveland, O.) (See pages 813 and 814.)

Gilles—See Brandenburg Bros. & Eccleston.

H. & N. Carburetor Co., 138 West Ave., Long Island City, N. Y.

Heco—See Heinze Electric Co.

Heinze Electric Co., Lawrence St., Lowell, Mass. "Heco."

Hess Mercury Carburetor Mfg. Co., Valparaiso, Ind.

Hexmen Motor Co., 1512-14 Clark St., Racine, Wis. (See page 199.)

Holley Kerosene Carburetor Co., Vancouver Ave. & P. M. R. R., Detroit, Mich.

Holtzer-Cabot Electric Co., 125 Armory St., Boston, Mass. "Newcomb."

Hoyt Carburetor & Automobile Co., 45 Union Ave., Boston, Mass.

J. B. J. Metro—See American Auto Products Co.

Jetajet—See Cammen Laboratories Co.

Johnson Co., 1909 E. Forest Ave., Detroit, Mich.

Juhasz Carburetor Co., 244 W. 49th St., New York, N. Y.

Jupiter—See Orem Motor Protector Co.

Justrite—See Wilcke-Armstrong Co.

Kemp, J. P., 418 Evesham Ave., Baltimore, Md.

Kingston—See Byrne, Kingston & Co.

Knox—See Camden Anchor-Rockland Machine Co.

L. H. P. Products Co., 189 N. Clark St., Chicago, Ill.

Lacharnay—See Lyons Ignition Co.

Light Mfg. & Foundry Co., Water St., Pottstown, Pa. "Parkin."

Lyons Ignition Co., 215-19 Fourth Ave., New York, N. Y. "Lacharnay." (See page 717.)

McFell Signal Co.—See Brandenburg Bros. & Eccleston.

M. T.—See Sunderman Corp.

Marvel Carbureter Co., Flint, Mich. (See pages 931 and 1173.)

Master Carburetor Co., Los Angeles, Cal. (See page 1165.)

Miller Mfg. Co., Harry A., 17th & S. Los Angeles Sts., Los Angeles, Cal. (See page 699.)

National Auto Accessory Co., Salem Depot, N. H.

Neverfail Carburetor Co., 200 Jackson Ave., Long Island City, N. Y. (See page 199.)

Newcomb—See Holtzer-Cabot Electric Co.

Nitro—See Sunderman Corp.

North Chicago Machine Co., Commonwealth Ave. & 22d St., North Chicago, Ill. "Palmbla."

Orem Motor Protector Co., 2827 N. Calvert St., Baltimore, Md. "Jupiter."

Palmbla—See North Chicago Machine Co.

Parkin—See Light Mfg. & Foundry Co.

Penberthy Injector Co., 1242 Holden Ave., Detroit, Mich.

Rayfield—See Beneke & Kropf Mfg. Co.

Schebler—See Wheeler-Schebler Carburetor Co.

Scoe—See Briscoe Devices Co.

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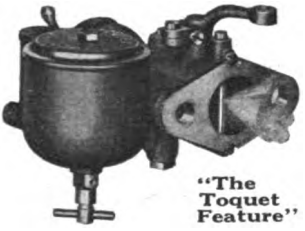
The Carburetor Built for the Motor

LET US DEMONSTRATE FOR YOUR Equipment

The Perfect Atomizer



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Write for Distributers' Proposition on our New Models for

FORDS AND DODGES

Complete Line for All Cars Will Soon Be Ready for Distribution

THE TOQUET CARBURETOR CORP.
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SUNDERMAN

CARBURETOR

Special Outfit for Ford Cars

Atomizes the gas into such a fine mist that every particle gives up *all* its power. This *complete* vaporization is an exclusive NITRO feature —it enables you to

The NITRO carburetor gives a clean-burning, hard-hitting mixture at all speeds—smoothes out the power impulses into a steady stream of energy—makes the Ford run like a six-cylinder.

Use Half Gas and Half Kerosene and Save 10 Cents on Every Gallon

$20.00

Write for Booklet

Sunderman Corporation
Newburgh, N. Y.

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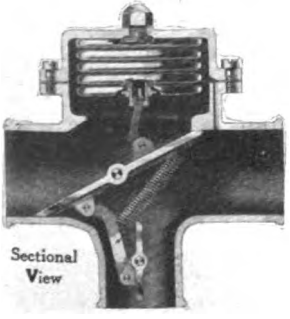
MOTOR THERMOSTAT

Rayfield Thermostats Make Winter Driving A Pleasure

By automatically controlling the circulation of water through the motor block, the Rayfield Thermostat enables a cold motor to warm up in two minutes. It stays warm longer. Starting is easier. Every motorist should have one on his car.


Sectional View

DEALERS
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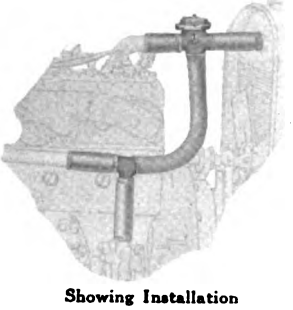
Showing Installation

Beneke & Kropf Mfg. Co.

2559 W. 21st Street **Chicago, Ill.**

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CARBURETORS, Gasoline (Cont'd)

Scott & Sons Co., Medford, Mass. "Ess-Ess."
Shain, Chas. D., Brooklyn, N. Y. "Ball Spray."
Shakespeare Co., Kalamazoo, Mich.
Simplex No-Flote Carburetor Co., 401-02 Detroit Savings Bank Bldg., Detroit, Mich.
Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) (See page 301.)
Stark-Inland Machine Works, 1647 Locust St., St. Louis, Mo. (See page 1045.)
Stewart—See Detroit Lubricator Co.
Stromberg Motor Devices Co., Dept. 120, 64 E. 25th St., Chicago, Ill. (See page 195.)
Sunderman Corp., Newburgh, N. Y. "M. T.," "Nitro." (See page 193.)
Swan—See Yale & Towne Mfg. Co.
Tillotson Mfg. Co., Toledo, O. (See page 191.)
Toquet Carburetor Corp., Dept. E, Westport, Conn. (See page 193.)
Trader & Co., R. V., 314 Atlantic Ave., McKeesport, Pa.
T. & J. Carburetor Co., 507 W. Jackson Blvd., Chicago, Ill.
Van Briggle Motor Device Co., 1506 N. Capitol Ave., Indianapolis, Ind.
Vaporator Corp., Majestic Bldg., Milwaukee, Wis. "Caloretor."
Webber Mfg. Co., 66-68 Stanhope St., Boston, Mass.
Wheeler-Schebler Carburetor Co., Indianapolis, Ind. "Schebler." (See page 199.)
Wilcox-Bennett Carburetter Co., 1030 Marshall St., N. E., Minneapolis, Minn. "Bennett."
Wilcke-Armstrong Co., 3199 Monroe Ave., Detroit, Mich. "Justrite."
Yale & Towne Mfg. Co., Stamford, Conn. "Swan." (See page 935.)
Zenith Carburetor Co., Detroit, Mich. (See page 195.)

CARBURETORS, Gasoline, for Fords

Air Friction Carburetor Co., First & Madison Sts., Dayton, O.
Atkins Co., E. G., 26 E. Sixth St., Mansfield, O.
Ball-Spray—See Shain, Chas. D.
Beneke & Kropf Mfg. Co., 2559 W. 21st St., Chicago, Ill. "Rayfield." (See page 193.)
Briscoe Devices Co., Pontiac, Mich. "Scoe."
Byrne, Kingston & Co., Kokomo, Ind. "Kingston." (See page 197.)
Camden Anchor-Rockland Machine Co., Camden, Me. "Knox."
Carter Carburetor Co., 2838-40 N. Spring Ave. St. Louis, Mo.
D. & B.—See Harrington Co.
Detroit Lubricator Co., 5842-5986 Trumbull Ave., Detroit, Mich. "Stewart."
Donning Carburetor Corp., Sanford St. & Unquowa Rd., Fairfield, Conn.
Douglas Auto-Appliance Co., 2845 Chicago Ave., Minneapolis, Minn. (See page 483.)
Duntley—See Little Giant Truck Co.
Ecco—See Economy Carburetor Co.
Economy Carburetor Co., 1664 Fratney St., Milwaukee, Wis. "Ecco."
Ensign Carburetor Co., 217 E. 17th St., Los Angeles, Cal.
Famasco Distributing Co., 694 Main St., Buffalo, N. Y. (Sole Distributors for Mayer Carburetor Co., Buffalo, N. Y.) (See page 433.)
Fletcher & Co., L. V., 192 Jackson Ave., Long Island City, N. Y. "Trident." (See page 195.)
Gardner Auto Products Co., Detroit, Mich. (Sole Distributors for Gardner Carburetor & Brass Works, Detroit, Mich.) (See page 239.)
Gardner Carburetor & Brass Works—See Gardner Auto Products Co.
Griffin Carburetor Co., 195 Paterson St., Paterson, N. J.
H. & N. Carburetor Co., 138 West Ave., Long Island City, N. Y.
Harrington Co., O. C., 4138 Fillmore St., Chicago, Ill. "D. & B."
Heco—See Heinze Electric Co.
Heinze Electric Co., Lawrence St., Lowell, Mass. "Heco."
Holley Kerosene Carburetor Co., Vancouver Ave. & P. M. R. R., Detroit, Mich.
Johnson Co., 1909 E. Forest Ave., Detroit, Mich.
Jupiter—See Orem Motor Protector Co.
Justrite—See Wilcke-Armstrong Co.
Kingston—See Byrne, Kingston & Co.
Knox—See Camden Anchor-Rockland Machine Co.
Little Giant Truck Co., Little Giant Bldg., Chicago, Ill. "Duntley."
M. T.—See Sunderman Corp.
Marvel Carbureter Co., Flint, Mich. (See pages 931 and 1173.)
Master Carburetor Co., Los Angeles, Cal. (See page 1165.)
Mayer Carburetor Co.—See Famasco Distributing Co.
Miller Mfg. Co., Harry A., 17th & S. Los Angeles Sts., Los Angeles, Cal. (See page 699.)
Neverfail Carburetor Co., 200 Jackson Ave., Long Island City, N. Y. (See page 199.)
Nitro—See Sunderman Corp.
North Chicago Machine Co., Commonwealth Ave. & 22d St., North Chicago, Ill. "Palmbla."
Orem Motor Protector Co., 2827 N. Calvert St., Baltimore, Md. "Jupiter."
Palmbla—See North Chicago Machine Co.
Rayfield—See Beneke & Kropf Mfg. Co.
Schebler—See Wheeler-Schebler Carbureter Co
Scoe—See Briscoe Devices Co.
Shain, Chas. D., Brooklyn, N. Y. "Ball Spray."
Stewart—See Detroit Lubricator Co.
Stokes Carburetor Co., 336 E. 133rd St., New York, N. Y.
Stromberg Motor Devices Co., Dept. 120, 64 E. 25th St., Chicago, Ill. (See page 195.)
Sunderman Corp., Newburgh, N. Y. "M. T.," "Nitro." (See page 193.)
Thermo Carburetor Co., 3127 W. Harrison St., Chicago, Ill.
Tillotson Mfg. Co., Toledo, O. (See page 191.)
Toquet Carburetor Corp., Dept. E, Westport, Conn. (See page 193.)
Trident—See Fletcher & Co.
T. & J. Carburetor Co., 507 W. Jackson Blvd., Chicago, Ill.
Van Briggle Motor Device Co., 1506 N. Capitol Ave., Indianapolis, Ind.
Webber Mfg. Co., 66-68 Stanhope St., Boston, Mass.

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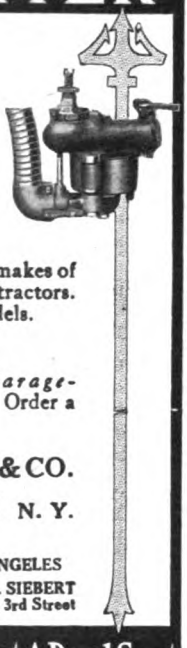
FLECHTER



More Power
More Flexibility
More Mileage
Easier Starting

Made in Bronze for all makes of cars, motor trucks and tractors. Top and side outlet models.

Distributors, Dealers, Garagemen: Get our plan. Order a sample.

L. V. FLECHTER & CO.
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BRANCHES:
DETROIT — F. M. ELDREDGE CO. 403 Stevens Bldg.
LOS ANGELES — M. J. SIEBERT 701 East 3rd Street

The Carburetor Without A Dead Spot

Service Stations

In every part of United States and Canada. A partial list of Zenith distributors follows:

ARK.—Little Rock, Holman & Moseley.
CALIF.—San Francisco, Lathan Auto Supply Co.
COLO.—Denver, Gall Auto Specialty Co.
FLA.—Tampa, Auto Electric Service Co.
GA.—Atlanta, Southern Auto & Equipment Co.
ILL.—Chicago, Zenith Carburetor Co., 2000 Wabash Ave.
KY.—Louisville, Atlas Machine Co.
LA.—New Orleans, J. K. Rippard.
MASS.—Boston, Motor Parts Co.
Springfield, E. B. Atmus.
MICH.—Detroit, Auto Electric & Service Corp.
MO.—Kansas City, Electric Products Co.
St. Louis, Automotive Engineering Co.
MINN.—Minneapolis, General Motor Service Co.
NEBR.—Omaha, Paxton & Gallagher Co.
N. Y.—Buffalo, Henry and Ferguson, Inc.
New York City, Zenith Carburetor Co., 692 11th Ave.
N. C.—Fayetteville, Fayetteville Storage Battery Co.
OHIO—Cleveland, Cleveland Ignition Co.
PA.—Philadelphia, Motor Parts Service.
S. C.—Columbia, Carolina Tire & Accessory Co.
S. D.—Sioux Falls, H. F. Brownell Co.
TENN.—Memphis, Automotive Elec. & Service Co.
Chattanooga, Mudge Auto Electric Co.
TEXAS—Fort Worth, Starter Service Co.
El Paso, Automobile Parts Co.
VA.—Richmond, W. M. Reynolds, Inc.
UTAH—Salt Lake City, J. Louis Anderson.
WASH.—Spokane, Wm. E. Chase Engr. Co.
ALTA.—Calgary, The Motor Car Supply Co. Ltd.
B. C.—Vancouver, Millen's B. C. Ltd.
ONT.—Toronto, Cutten & Foster, Ltd.
SASK.—Regina, Motor Supplies Ltd.

Zenith Carburetor Co.
DETROIT, U. S. A.
New York — Chicago

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CARBURETORS, Gasoline, for Fords (Continued)

Western Carbureter Co., 610 W. End Ave., Alma, Mich.

Wheeler-Schebler Carburetor Co., Indianapolis, Ind. "Schebler." (See page 199.)

Wilcke-Armstrong Co., 3199 Monroe Ave., Detroit, Mich. "Justrite."

Zenith Carburetor Co., Detroit, Mich. (See page 195.)

CARBURETORS, Kerosene

Atkins Co., E. G., 26 E. Sixth St., Mansfield, O.

Bennett—See Wilcox-Bennett Carburetter Co.

Camden Anchor-Rockland Machine Co., Camden, Me. "Knox."

Cammen Laboratories Co., 42 W. 39th St., New York, N. Y. "Jetajet."

Conservation Carburetor Co., Citizens Nat'l Bank Bldg., Des Moines, Ia.

Dual Carburetor & Mfg. Co., Superior Ave. & E. 40th St., Cleveland, O.

Ensign Carburetor Co., 217 E. 17th St., Los Angeles, Cal.

Good Inventions Co., 271 37th St., Brooklyn, N. Y.

H. & N. Carburetor Co., 138 West Ave., Long Island City, N. Y.

Holley Kerosene Carburetor Co., Vancouver Ave. & P. M. R. R., Detroit, Mich.

Ingram Motors Co., 1041-D Bay St., Rosebank, S. I., N. Y. (See page 827.)

Jetajet—See Cammen Laboratories Co.

Knox—See Camden Anchor-Rockland Machine Co.

L. H. P. Products Co., 189 N. Clark St., Chicago, Ill.

Linga—See Specialty Brass Co.

Master Carburetor Co., Los Angeles, Cal. (See page 1165.)

Nitro—See Sunderman Corp.

Senrab Carburetor Co., Sea Cliff, N. Y.

Specialty Brass Co., S. Howland Ave., Kenosha, Wis. "Linga."

Stark-Inland Machine Works, 1647 Locust St., St. Louis, Mo. (See page 1045.)

Stromberg Motor Devices Co., Dept. 120, 64 E. 25th St., Chicago, Ill. (See page 195.)

Sunderman Corp., Newburgh, N. Y. "Nitro." (See page 193.)

Tilletson Mfg. Co., Toledo, O. (See page 191.)

Trader & Co., R. V., 814 Atlantic Ave., McKeesport, Pa.

Wilcox-Bennett Carburetter Co., 1030 Marshall St., N. E., Minneapolis, Minn. "Bennett."

CARBURETORS, Kerosene, for Fords

(For Fuel or Mixture Heaters—see Heaters, Mixture: for Special Jacketed Manifolds—See Manifolds, Special and Jacketed)

Atkins Co., E. G., 26 E. Sixth St., Mansfield, O.

Frankfort Carburetor Co., Frankfort ,Ind.

Henner Automatic Oil Carburetor Co., 1000 E. Main St., Rochester, N. Y.

M. T.—See Sunderman Corp.

Master Carburetor Co., Los Angeles, Cal. (See page 1165.)

Nitro—See Sunderman Corp.

Sunderman Corp., Newburgh, N. Y. "M. T.," "Nitro." (See page 193.)

Western Carbureter Co., 610 West End Ave., Alma, Mich.

CARBURETORS, Motor Boat Gasoline

(See also Valves, Generator)

Air-Friction Carburetor Co., First & Madison Sts., Dayton, O.

Atkins Co., E. G., 26 E. Sixth St., Mansfield, O.

Beneke & Kropf Mfg. Co., 2559 W. 21st St., Chicago, Ill. "Rayfield." (See page 193.)

Bennett—See Wilcox-Bennett Carburetter Co.

Booty Carburetor Mfg. Co., 3254 S. Michigan Ave., Chicago, Ill.

Briscoe Devices Co., Pontiac, Mich.

Byrne, Kingston & Co., Kokomo, Ind. "Kingston." (See page 197.)

Camden Anchor-Rockland Machine Co., Camden, Me. "Knox."

Carter Carburetor Co., 2838-40 N. Spring Ave St. Louis, Mo.

Eagle Carburetor Co., 11502 Madison Ave., N. W., Cleveland, O.

Ensign Carburetor Co., 217 E. 17th St., Los Angeles, Cal.

Fletcher & Co., L. V., 192 Jackson Ave., Long Island City, N. Y. (See page 195.)

Generator Valve Co., 47 Dinsmore Pl., Brooklyn, N. Y. "James-Acorn."

Holtzer-Cabot Electric Co., 125 Armory St., Boston, Mass. "Newcomb."

James-Acorn—See Generator Valve Co.

Kingston—See Byrne, Kingston & Co.

Knox—See Camden Anchor-Rockland Machine Co.

Master Carburetor Co., Los Angeles, Cal. (See page 1165.)

Miller Mfg. Co., Harry A., 17th & S. Los Angeles Sts., Los Angeles, Cal. (See page 699.)

Monarch Valve Co., 112 Front St., Brooklyn, N. Y.

Newcomb—See Holtzer-Cabot Electric Co.

North Chicago Machine Co., Commonwealth Ave. & 22d St., North Chicago, Ill. "Palmbla."

Palmbla—See North Chicago Machine Co.

Rayfield—See Beneke & Kropf Mfg. Co.

Schebler—See Wheeler-Schebler Carburetor Co.

Scoe—See Briscoe Devices Co.

Shain, Chas. D., Brooklyn, N. Y.

Shakespeare Co., Kalamazoo, Mich.

Stromberg Motor Devices Co., Dept. 120, 64 E. 25th St., Chicago, Ill. (See page 195.)

Sunderman Corp., Newburgh, N. Y. (See page 193.)

Van Briggle Motor Device Co., 1506 N. Capitol Ave., Indianapolis, Ind.

Webber Mfg. Co., 66-68 Stanhope St., Boston, Mass.

Wheeler-Schebler Carburetor Co., Indianapolis, Ind. "Schebler." (See page 199.)

Wilcox-Bennett Carburetter Co., 1030 Marshall St., N. E., Minneapolis, Minn. "Bennett."

Zenith Carburetor Co., Detroit, Mich. (See page 195.)

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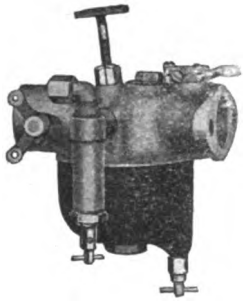

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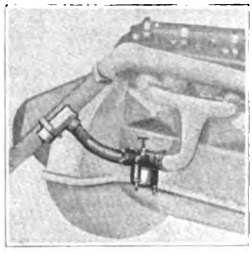
Simplicity of Air Preheating Device

The Kingston Special Air Preheating Device combines extreme simplicity with exceptional efficiency. It consists of an aluminum warm-air collector to be clamped by a simple hose connection to the exhaust pipe, and a section of flexible metal tubing for the carburetor connection. It can be installed in five minutes, by anybody. It delivers preheated air directly to the mixing chamber, insuring perfect carburization, greater ease in operation and a big saving in fuel. It will more than pay for itself in a short time. The device is shown in the cut on the left. Method of installation is shown on the right.



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CARBURETORS, Motor Boat Kerosene

Atkins Co., E. G., 26 E. Sixth St., Mansfield, O.
Bennett—See Wilcox-Bennett Carburetter Co.
Camden Anchor-Rockland Machine Co., Camden, Me. "Knox."
Ensign Carburetor Co., 217 E. 17th St., Los Angeles, Cal.
Ingram Motors Co., 1041-D Bay St., Rosebank, S. I., N. Y. (See page 827.)
Knox—See Camden Anchor-Rockland Machine Co.
Master Carburetor Co., Los Angeles, Cal. (See page 1165.)
Wilcox-Bennett Carburetter Co., 1030 Marshall St., N. E., Minneapolis, Minn. "Bennett."

CARBURETORS, Motorcycle Gasoline

Beneke & Kropf Mfg. Co., 2559 W. 21st St., Chicago, Ill. "Rayfield." (See page 193.)
Byrne, Kingston & Co., Kokomo, Ind. "Kingston." (See page 197.)
Carter Carburetor Co., 2838-40 N. Spring Ave., St. Louis, Mo.
Kingston—See Byrne-Kingston Co.
Marvel Carburetor Co., Flint, Mich. (See pages 931 and 1173.)
Master Carburetor Co., Los Angeles, Cal. (See page 1165.)
Rayfield—See Beneke & Kropf Mfg. Co.
Schebler—See Wheeler-Schebler Carburetor Co.
Shain, Chas. D., Brooklyn, N. Y.
Sunderman Corp., Newburgh, N. Y. (See page 193.)
Wheeler-Schebler Carburetor Co., Indianapolis, Ind. "Schebler." (See page 199.)
Zenith Carburetor Co., Detroit, Mich. (See page 195.)

CARBURETORS, Tractor Gasoline

Atkins Co., E. G., 26 E. Sixth St., Mansfield, O.
Beneke & Kropf Mfg. Co., 2559 W. 21st St., Chicago, Ill. "Rayfield." (See page 193.)
Bennett—See Wilcox-Bennett Carburetter Co.
Booty Carburetor Mfg. Co., 3254 S. Michigan Ave., Chicago, Ill.
Byrne, Kingston & Co., Kokomo, Ind. "Kingston." (See page 197.)
Camden Anchor-Rockland Machine Co., Camden, Me. "Knox."
Carter Carburetor Co., 2838-40 N. Spring Ave., St. Louis, Mo.
Ensign Carburetor Co., 217 E. 17th St., Los Angeles, Cal.
Generator Valve Co., 47 Dinsmore Pl., Brooklyn, N. Y. "James-Acorn."
Holtzer-Cabot Electric Co., 125 Armory St., Boston, Mass. "Newcomb."
James-Acorn—See Generator Valve Co.
Kingston—See Byrne-Kingston Co.
Knox—See Camden Anchor-Rockland Machine Co.
Knox Motors Associates, Springfield, Mass.
Marvel Carbureter Co., Flint, Mich. (See pages 931 and 1173.)
Master Carburetor Co., Los Angeles, Cal. (See page 1165.)
Miller Mfg. Co., Harry A., 17th & S. Los Angeles Sts., Los Angeles, Cal. (See page 699.)
Newcomb—See Holtzer-Cabot Electric Co.
North Chicago Machine Co., Commonwealth Ave. & 22d St., North Chicago, Ill. "Palmbla."
Orem Motor Protector Co., 2827 N. Calvert St., Baltimore, Md.
Palmbla—See North Chicago Machine Co.
Rayfield—See Benecke & Kropf Mfg. Co.
Schebler—See Wheeler-Schebler Carburetor Co.
Shain, Chas. D., Brooklyn, N. Y.
Shakespeare Co., Kalamazoo, Mich.
Stromberg Motor Devices Co., Dept. 120, 64 E. 25th St., Chicago, Ill. (See page 195.)
Sunderman Corp., Newburgh, N. Y. (See page 193.)
U. & J. Carburetor Co., 507 W. Jackson Blvd., Chicago, Ill.
Van Briggle Motor Device Co., 1506 N. Capitol Ave., Indianapolis, Ind.
Webber Mfg. Co., 66-68 Stanhope St., Boston, Mass.
Wheeler-Schebler Carburetor Co., Indianapolis, Ind. "Schebler." (See page 199.)
Wilcox-Bennett Carburetter Co., 1030 Marshall St., N. E., Minneapolis, Minn. "Bennett."
Zenith Carburetor Co., Detroit, Mich. (See page 195.)

CARBURETORS, Tractor Kerosene

Atkins Co., E. G., 26 E. Sixth St., Mansfield, O.
Bennett—See Wilcox-Bennett Carburetter Co.
Camden Anchor-Rockland Machine Co., Camden, Me. "Knox."
Ensign Carburetor Co., 217 E. 17th St., Los Angeles, Cal.
Holley Kerosene Carburetor Co., Vancouver Ave. & P. M. R. R., Detroit, Mich.
Ingram Motors Co., 1041-D Bay St., Rosebank, S. I., N. Y. (See page 827.)
Kero-Karburetor—See Western Carburetor Co.
Knox—See Camden Anchor-Rockland Machine Co.
Master Carburetor Co., Los Angeles, Cal. (See page 1165.)
Neverfail Carburetor Co., 200 Jackson Ave., Long Island City, N. Y. (See page 199.)
Western Carburetor Co., Alma, Mich. "Kero-Karburetor."
Wilcox-Bennett Carburetter Co., 1030 Marshall St., N. E., Minneapolis, Minn. "Bennett."

CARPET BINDING—See Binding, Mat and Carpet

CARPET, Coach

(See also Trimmings, Cloth and Carpet)

Amber—See Sloane, W. & J.
Bridgeport Coach Lace Co., Bridgeport, Conn. (See page 167.)
Cochrane Mfg. Co., East Dedham, Mass.
Dobson, John & James, 809 Chestnut St. Philadelphia, Pa.
Dusenbury & Co., Louis, New York, N. Y. (Sole Distributors for Magee Carpet Co., Bloomingsburg, Pa.) (See page 489.)

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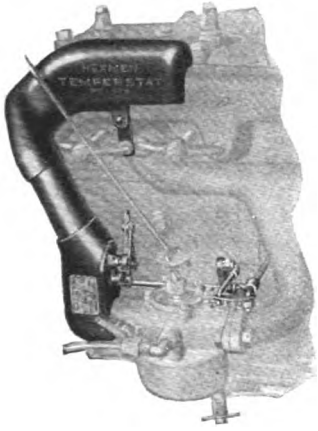

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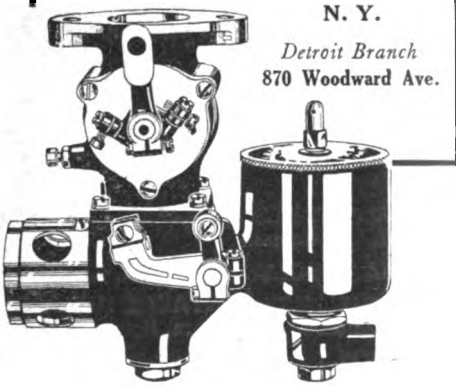

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CARPET, Coach (Continued)

Highspire—See Sloane, W. & J.

Hirst-Roger Co., Philadelphia, Pa. (See page 201.)

McCleary, Wallin & Crouse, Amsterdam, N. Y.

Magee Carpet Co.—See Dusenbury & Co.

Masland & Sons—See Sloane, W. & J.

Midland Fabrics Co., 228 W. 58th St., New York, N. Y. (Distributors.) (See page 935.)

Overbrook Carpet Co.—See Poulson & Co.

Poulson & Co., Charles W., 133 Fifth Ave., New York, N. Y. (Sole Distributors for Overbrook Carpet Co., Philadelphia, Pa.) (See page 201.)

Schofield, Mason & Co., Fairhill, Reese & Cumberland Sts., Philadelphia, Pa.

Sloane, W. & J., 575 Fifth Ave., New York, N. Y. (Sole Distributors for C. H. Masland & Sons, Philadelphia, Pa.) "Highspire," "Amber." (See page 201.)

Strongtex—See Strong Textile Co.

Strong Textile Co., 245 W. 55th St., New York, N. Y. "Strongtex." (See page 251.)

CARPET MATS—See Mats, Carpet, also Carpet

CARPET TRIMMINGS—See Trimmings, Cloth and Carpet

CARRIAGE BOLTS—See Bolts, Machine

CARRIERS, DEMOUNTABLE WHEEL—See Holders or Carriers, Spare Wheel

CARRIERS, LUGGAGE—See Racks, Trunk; also Bags, Coat Rail; also Holders, Suit Case; also Trunks

CARRIERS, Motorcycle Luggage

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 545.)

Forsyth Metal Goods Co., East Aurora, N. Y.

Shillan, Beck & Co., 68 E. 131st St., New York, N. Y.

CARRIERS, SPARE WHEEL—See Holders or Carriers, Spare Wheel

CARRIERS, STORAGE BATTERY

A. G.—See Battery Equipment & Supply Co.

American Bureau of Engineering, Michigan Ave. & 16th St., Chicago, Ill. (See page 485.)

Battery Equipment & Supply Co., 1458-60 S. Michigan Blvd., Chicago, Ill. "A. G." (See page 387.)

Shonts Co., H. B., 157 W. 54th St., New York, N. Y. (See page 733.)

CARRIERS, TIRE—See Holders, Tire.

CARS, Motorcycle Side and Fore

Abresch Co., Chas., 397 Fourth St., Milwaukee, Wis.

Cygnet Mfg. Co., 41 Perry St., Buffalo, N. Y.

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. "Rogers." (See page 545.)

Excelsior Motor Mfg. & Supply Co., 3701 Cortland St., Chicago, Ill. "Henderson."

Flxible Co., Loudonville, O.

Harley-Davidson Motor Co., 3732 Chestnut St., Milwaukee, Wis.

Hastings Mfg. Co., Goshen, Ind. "National."

Henderson—See Excelsior Motor Mfg. & Supply Co.

National—See Hastings Mfg. Co.

Rogers—See Ero Mfg. Co.

Side Car Co., Loudonville, O.

CASE-HARDENING—See Treating, Heat

CASE-HARDENING COMPOUNDS — See Compounds, Case-Hardening

CASE-HARDENING FURNACES—See Furnaces, Annealing

CASE-HARDENING MATERIALS — See Compounds, Case-Hardening

CASES, ACCIDENT—See Cases, Medical Emergency

CASES, BATTERY—See Boxes, Battery

CASES, Bolt and Screw

American Bolt & Screw Case Co., Davies Bldg., Dayton, O.

H-B—See Hobart Bros. Co.

Heller & Co., W. C., Wabash Ave., Montpelier, O.

Hobart Bros. Co., Box C 103, Troy, N. Y. "H-B." (See page 387.)

New Britain Machine Co., Chestnut St., New Britain, Conn.

CASES, BULB—See Cases, Extra Lamp Bulb

CASES, CARD—See Cases, Toilet

CASES, Curtain, for Fords

(Leather or fabric bags or cases for carrying top or storm curtains)

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 321.)

R-E—See Roose Mfg. Co.

Roose Mfg. Co., 327-33 W. Main St., Louisville, Ky. "R-E." (See pages 129, 151, 325 and 327.)

CASES, EMERGENCY—See Cases, Medical Emergency

CASES, Extra Lamp Bulb

(Cases or boxes for carrying spare lamp bulbs on car)

Auburn Leather Goods Co., 3 Miller St., Auburn, N. Y.

Campbell—See Perkins-Campbell Co.

Connecticut Telephone & Electric Co., Meriden, Conn.

Dover Stamping & Mfg. Co., 385 Putnam Ave., Cambridge, Mass. (See page 433.)

Globe Machine & Stamping Co., 1200-50 W. 76th St., Cleveland, O. (See page 1049.)

Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. "Campbell." (See page 317.)

CASES, LAMP—See Cases, Extra Lamp Bulb

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Horsehair Tapestry . . . . . 5 grades
Jute Velvet . . . . . 5 grades
Wool Velvet . . . . . 6 grades
Wool Moresque Velvet . . 1 grade

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CASES, LUGGAGE, FOR FORDS — See Bags, Luggage

CASES, LUNCHEON—See Hampers, Touring

CASES, Medical Emergency

First Aid Equipment Co., 16 E. 23d St., New York, N. Y.

Wilford Hall Laboratories, Portchester, N. Y.

CASES, PLUG—See Cases, Spark Plug

CASES, SCREW—See Cases, Bolt and Screw

CASES, SPARK COIL—See Boxes, Spark Coil

CASES, Spark Plug

(Leather or Fabric cases for holding spare plugs)

Algco—See Auburn Leather Goods Co.

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 321.)

Auburn Leather Goods Co., 8 Miller St., Auburn, N. Y. "Algco."

B. E. Mfg. Co., 18 W. 18th St., New York, N. Y. "Bemco." (See page 321.)

Bemco—See B. E. Mfg. Co.

Campbell—See Perkins-Campbell Co.

Clifton Mfg. Co., 323-27 Pleasant St., Waco, Texas.

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 545.)

Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 321.)

Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. "Campbell." (See page 317.)

Powers Mfg. Co., Waterloo, Iowa. (See page 593.)

R-E—See Roose Mfg. Co.

Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E." (See pages 129, 151, 325 and 327.)

Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo.

CASES, TIRE—See Covers, Spare Tire

CASES, Toilet and Card

(For limousines or other closed cars)

Art Work Shop, 700 Main St., Buffalo, N. Y. (See page 503.)

Cowles & Co., C., New Haven, Conn. (See page 651.)

Kraft & Sons, Theo., 458 W. Broadway, New York, N. Y.

Mt. Vernon Co., Mt. Vernon, N. Y.

O'Brien Mfg. Co., Joseph F., 391 Broadway, New York, N. Y.

Rumpp & Sons, C. F., Fifth & Cherry Sts., Philadelphia, Pa.

Shepard Art Metal Co., Detroit, Mich. (See page 515.)

Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) (See page 301.)

Taylor Co., H. D., 99-115 Oak St., Buffalo, N. Y.

CASES, TOOL—See Bags, Tool; also Boxes, Tool

CASES, TUBE—See Covers, Spare Tire

CAST IRON CEMENT—See Cement, Cast Iron

CAST STEEL WHEELS—See Wheels, Cast Steel

CASTINGS, Aluminum

Acme Brass Works, 8211 Collins Ave., Detroit, Mich.

Acme Works, Indianapolis, Ind.

Active Castings Co., 1008 Maple St., Detroit, Mich.

Adams & Westlake Co., Chicago, Ill. "Adlake." (See page 551.)

Adlake—See Adams & Westlake Co.

Adrian Brass & Aluminum Casting Co., Adrian, Mich.

Aetna Brass & Bronze Co., 1631-35 E. 55th St., Cleveland, O.

Albrass Co., Trivoli St., Albany, N. Y.

Alloy Foundry & Machine Corp., 73 Cedar St., New Rochelle, N. Y.

Allyne—See Aluminum Castings Co

Aluminite—See Green Engineering Co.

Aluminum Manufacturers, Inc., 6205 Carnegie Ave., Cleveland, O. "Lynite."

Aluminum Foundry Co., Bauch St., Sebring, O.

American Brass & Iron Co., Detroit, Mich. (See page 205.)

American Bronze Co., 90-108 Arthur St., Buffalo, N. Y.

American Foundry Co., 634 S. 11th St., Newark, N. J.

American Non-Ferrous Metals Corp., Chester, Pa.

Amesbury Brass & Foundry Co., Amesbury, Mass.

Anderson Foundry Co., Wm. B., 24-30 S. Clinton St., Chicago, Ill. "W. B."

Ashland Brass Foundry, Virginia Ave., Ashland, O.

Atlas Brass Foundry Co., Columbus, O. (See page 595.)

Auto Products Co., Station H, Cincinnati, O. (See page 1193.)

Bay View Foundry Co., McDonough, Water & Shelby Sts., Sandusky, O.

Beere Iron & Wire Works, 294-96 Taaffe St., Brooklyn, N. Y.

Bergen Point Brass Foundry, 161 Hoyt Ave., Bayonne, N. J.

Blake, Edwin J., 565 Windsor St., Hartford, Conn.

Bohn Foundry Co., Chas. B., 3651 Hart Ave., Detroit, Mich.

Brass & Bronze Castings Co., 6515 Carnegie Ave., S. E., Cleveland, O.

Bridgeport Deoxidized Bronze & Metal Co., 459 Iranistan Ave., Bridgeport, Conn.

Brown Bros., 46-48 Garden St., Stamford, Conn.

Buffalo Non-Ferrous Casting & Mfg. Co., 41 Letchworth St., Buffalo, N. Y. "Higrade."

Bunting Brass & Bronze Co., 737 Spencer St., Toledo, O. (See page 295.)

C. & C. Sales Corp., 1755 Broadway, New York, N. Y. (Distributors.) (See page 505.)

Caskey's Brass & Bronze Works, Richmond & York Sts., Philadelphia, Pa.

Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 345.)

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CASTINGS, Aluminum (Continued)

Champion Brass Works, Coldwater, Mich. (See page 615.)

Cincinnati Aluminum Casting Co., Cincinnati, O. "Lumite."

City Brass Foundry, 21 Slater Ave., Pawtucket, R. I.

City Brass Foundry Co., 5318 St. Clair Ave., N. E., Cleveland, O.

Clayton & Lambert Mfg. Co., Detroit, Mich. (See page 981.)

Cleveland Aluminum Casting Co., 901 Addison Rd., Cleveland, O.

Cochrane Brass Foundry Co., S. Richland Ave. & No. Central Tracks, York, Pa.

Columbia Castings Co., Ferdinand Ave. & Wabash R. R., Detroit, Mich.

Columbus Brass Co., 540 Dublin Ave., Columbus, O.

Connecticut Brass Foundry Co., 660 E. Main St., Waterbury, Conn.

Cope-Swift Co., McDougall Ave. & Wight St., Detroit, Mich. (See page 619.)

Cramp & Sons Ship & Engine Bldg. Co., William, Philadelphia, Pa. (See page 209.)

D'Este Co., Julian, 26 Canal St., Boston, Mass.

Delaware Brass & Aluminum Co., 20th & Walnut Sts., Muncie, Ind.

Diamond Brass Foundry & Machine Co., 1115 Washington Blvd., Chicago, Ill.

Dorchester Brass & Aluminum Foundry, Old Sturtevant Bldg. (Jamaica Plain), Boston, Mass.

Electric Materials Co., North East, Pa.

Ellison Brass Mfg. Co., Jamestown, N. Y.

Erie Bronze Co., 355 W. 19th St., Erie, Pa. (See page 261.)

Essex Brass Foundry Co., Sixth & Harvard Sts., Cambridge, Mass.

Eureka Co., North East, Pa.

Faries Mfg. Co., 624 N. Union St., Decatur, Ill.

Fischer-Sweeny Bronze Co., 13th & Grand Sts., Hoboken, N. J.

Fitz Water Wheel Co., Penn St. & Penna. R. R., Hanover, Pa.

Foster Brass Foundries, 815 Vernal St., Cedar Rapids, Ia.

Frontier Brass Foundry, 818 Elmwood Ave., Niagara Falls, N. Y.

G. & R. Foundry & Machine Co., 6½ St. & Penn. R. R., Terre Haute, Ind.

Gallagher's Sons, James, 87 Centre St., New York, N. Y.

General Aluminum & Brass Mfg. Co., Detroit, Mich. "Ring True." (See page 203.)

General Bronze Foundry Co., 5810 Superior Ave., Cleveland, O. "Werne," "Tenite." (See page 651.)

General Castings Co., Ford Bldg., Detroit, Mich.

General Railway Signal Co., Rochester, N. Y.

Gerson-Carey Co., Kalamazoo St. & L. S. Ry., Lansing, Mich.

Gilbert & Sons Brass Foundry Co., A., 4019 Forest Park Blvd., St. Louis, Mo. (See page 207.)

Globe Brass Works, 1212 W. Liberty St., Cincinnati, O.

Graham & Co., James, 298 Wooster St., New Haven, Conn.

Green Engineering Co., Main St. & Burns Ave., Dayton, O. "Aluminite."

Griswold Mfg. Co., 1055 W. 12th St., Erie, Pa.

Hampden Brass Co., Springfield, Mass.

Harley Co., Page Blvd., Springfield, Mass. (See pages 205 and 425.)

Harsch Bronze & Foundry Co., John, 11612 Madison Ave., Cleveland, O.

Herculite—See Levett Co.

Higgins Brass Works, J. C., Eighth & Main Sts., San Diego, Cal.

Higrade—See Buffalo Non-Ferrous Casting & Mfg. Co.

Hoboken Brass Co., Seventh & Madison Sts., Hoboken, N. J.

Hoffman Bronze & Aluminum Casting Co., 998 Addison Rd., Cleveland, O.

Hotz Foundry & Mfg. Co., Wolf Ave., Fremont, O.

Howard Metal Co., Second & Canal Sts., Reading, Pa.

I B C—See Indianapolis Brass Co.

Ideal Bronze Co., 1265-69 E. 55th St., Cleveland, O. (See page 205.)

Illinois Malleable Iron Co., 1801-25 Diversey Blvd., Chicago, Ill.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Indianapolis Brass Co., 1012 E. Michigan St., Indianapolis, Ind. "I B C."

Jefferson Brass Foundry, 209-11 King St., Brooklyn, N. Y.

Jonah & George, Little's Ct., Merrimac, Mass.

Johnson Bronze Co., New Castle, Pa. (See page 181.)

Joppa Machine & Bronze Co., 1527 N. Fawn St., Philadelphia, Pa.

K & M Brass & Aluminum Castings Co., 10611-13 Quincy Ave., Cleveland, O.

Kauffman Metal Parts Co., Bellefontaine, O.

Kelly Brass Works, 226 W. Ontario St., Chicago, Ill.

Keyless Lock Co., 1401 Newman St., Indianapolis, Ind.

Kinsey & Mahler Co., 400 S. Adams St., Peoria, Ill.

Kokomo Brass Works, 1415 Webster St., Kokomo, Ind.

Lalor Fuel Oil System Co., 527-33 Colvin St., Baltimore, Md.

Levering Bros., 200 Key Highway, Baltimore, Md.

Levettal—See Levett Co.

Levett Co., Walker M., 417-21 E. 234 St., New York, N. Y. "Magnalite," "Levettal," "Herculite." (See page 705.)

Light Mfg. & Foundry Co., Water St., Pottstown, Pa.

Limerick Co., J. Arthur, 960 N. Howard St., Baltimore, Md.

Lough Bros., 90 West St., New York, N. Y. (Dealers.) (See page 207.)

Lumite—See Cincinnati Aluminum Casting Co.

Lusk Brass Foundry, J. H., 325 Liberty St., Jackson, Mich.

Lynite—See Aluminum Castings Co.

McKenna Brass & Mfg. Co., First Ave. & Ross St., Pittsburgh, Pa.

Machinists Foundry Co., Tenth St. & Macedonia Ave., Muncie, Ind.

Magnalite—See Levett Co.

Maluminum Castings Co., 1116-30 E. Georgia St., Indianapolis, Ind.

Martin & Anson, 2226-28 Indiana Ave., Chicago, Ill.

Michaels Bronze Co., 230-40 Scott St., Covington, Ky.

Mills Brass Co., Wm. A., Port Chester, N. Y.

Moak Machine & Tool Co., 2547 Connors St., Port Huron, Mich.

Moline Iron Works, Moline, Ill. (See page 601.)

Monumental Bronze Co., 354 Howard St., Bridgeport, Conn.

Mueller Metals Co., Lapier Ave., Port Huron, Mich.

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CASTINGS, Aluminum (Continued)

Mulholland, W. J., Commercial Trust Bldg., Philadelphia, Pa.
Muskegon Aluminum Foundry Co., Clay & Ninth Sts., Muskegon, Mich.
Nabralco—See National Bronze & Aluminum Foundry Co.
National Brass Mfg. Co., 191-93 Mill St., Rochester, N. Y.
National Bronze & Aluminum Castings Co., 3530-60 Garfield Ave., Detroit, Mich.
National Bronze & Aluminum Foundry Co., 2539 E. 79th St., Cleveland, O. "Nabralco."
Neptune Meter Co., 50 E. 42d St., New York, N. Y.
Niagara Brass Mfg. Co., Lockport, N. Y.
Non-Ferrous Alloys Co., 8162 W. Fort St., Detroit, Mich.
North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn.
Oberdorfer Brass Co., M. L., 304 E. Water St., Syracuse, N. Y.
Paramount Pattern & Model Works, 302-04 McDougal St., Brooklyn, N. Y.
Pattern & Castings Co., Saginaw, Mich.
Paulsen & Son, Thomas, 97 Second Ave., Brooklyn, N. Y. (See page 207.)
Pioneer Brass Works, 413-24 S. Penn St., Indianapolis, Ind.
Pittsburgh Brass Mfg. Co., 32d St. & Penn Ave., Pittsburgh, Pa.
Premier Metal Etching Co., 14th St. & Van Alst Ave., Long Island City, N. Y.
Pro. Econ. Foundries, Lake & Crown Sts., Bloomfield, N. J.
Providence Brass & Aluminum Foundry, 460 Eddy St., Providence, R. I.
Racine Aluminum & Brass Foundry Co., 1329 12th St., Racine, Wis.
Reeves & Co., Paul S., 1415-25 Catharine St., Philadelphia, Pa.
Regal Brass Foundry Co., 72 E. Larned St., Detroit, Mich.
Rider-Bagg Co., 369 Birnie Ave., Springfield, Mass.
Rincon Foundry Co., 349-65 Seventh St., San Francisco, Cal.
Ring True—See General Aluminum & Brass Mfg. Co.
Ross Machine Co. (Wollaston), Quincy, Mass. (See page 617.)
Rostand Mfg. Co., Milford, Conn.
Royal Machine & Foundry Co., 388-90 Division St., Oshkosh, Wis. (See page 503.)
"S-C" Regulator Co., Perry & High Sts., Fostoria, O.
Sayre Stamping Co., Lockhart Bldg., Sayre, Pa.
Service Pattern Mfg. Co., 1469 E. Grand Blvd., Detroit, Mich.
Sharp Brass Works, J. C., Boyce & 20th Sts., Chattanooga, Tenn.
Sherwood Brass Works, 6331 E. Jefferson Ave., Detroit, Mich.
Smith Hardware Co., Frank F., 85 Clay St., Newark, N. J.
Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.
Spindler & Deringer, Colgate & Mercer Sts., Jersey City, N. J.
Standard Brass & Iron Works, 1820 St. Paul Ave., Milwaukee, Wis.
Standard Brass Foundry Co., 990 E. 67th St., Cleveland, O.
Standard Foundry Co., Hartford, Conn.
Standard Separator Co., 45th St. & Burnham Rd., Milwaukee, Wis.
Stanley Foundry Co., North St. & Davis Ave., N. W., Grand Rapids, Mich.
Sterling Sales Co., Auburn, Ind.
Stiles Mfg. Co., St. Louis, Mo. (See page 521.)
Sunderman Corp., Newburgh, N. Y. (See page 193.)
Superior Brass Works, Detroit, Mich. (See page 1125.)
Superior Bronze Corp., 19th & Poplar Sts., Erie, Pa.
T. B. C.—See Titanium Bronze Co.
Tenite—See General Bronze Foundry Co.
Titanium Bronze Co., Sugar & Lafayette Sts., Niagara Falls, N. Y. "T. B. C."
Unique Brass Foundry Co., 333-41 Grant St., Buffalo, N. Y.
United Brass & Aluminum Mfg. Co., Goulden St., Port Huron, Mich.
Verilite Metals Co., 433 E. Girard Ave., Philadelphia, Pa.
Victoria Metal Co., 332-36 E. Eighth St., Erie, Pa.
W. B.—See Anderson Foundry Co.
Walsh, James F., 32 N. Clinton St., Chicago, Ill.
Waterbury Brass Goods Corp., 160 Washington Ave., Waterbury, Conn.
Weber-Knapp Co., Jamestown, N. Y.
Wellman Bronze Co., 6017 Superior Ave., Cleveland, O.
Werne—General Bronze Foundry Co.
Werra Aluminum Foundry Co., Waukesha, Wis. (See page 207.)
Western Brass Mfg. Works, Marshall Blvd., 21st St., Chicago, Ill. (See page 1097.)
Wilco Co., 172 Griswold St., Detroit, Mich. (Distributors.) (See page 221.)
Williams, Franklin, 263 Jefferson St., Newark, N. J. (See page 163.)
Williams & Son, E. A., 105-11 Plymouth St., Jersey City, N. J.
Wisconsin Aluminum Foundry Co., 16th & Franklin Sts., Manitowoc, Wis.
Wolkow & Sons, F., 123 W. Market St., Louisville, Ky.
York Hardware & Brass Works, 501-50 E. Market St., York, Pa.

CASTINGS, BRASS—See Castings, Bronze and Brass

CASTINGS, Bronze and Brass

Acme Brass Works, 8211 Collins Ave., Detroit, Mich.
Active Castings Co., 1008 Maple St., Detroit, Mich.
Adamant—See Cincinnati Aluminum Casting Co.
Adams & Westlake Co., Chicago, Ill. "Adlake." (See page 551.)
Adlake—See Adams & Westlake Co.
Adrian Brass & Aluminum Casting Co., Adrian, Mich.
Advance Brass Mfg. Co., E. Western Ave., Muskegon, Mich.
Aetna Brass & Bronze Co., 1631-35 E. 55th St., Cleveland, O.
Albrass Co., Trivoli St., Albany, N. Y.
Alloy Foundry & Machine Corp., 73 Cedar St., New Rochelle, N. Y.
Aluminum Manufacturers, Inc., 6205 Carnegie Ave., Cleveland, O. "Lynux."
American Brass Products Co., Pottstown, Pa.
American Brass & Iron Co., Detroit, Mich. (See page 205.)
American Bronze Corp., Berwyn, Pa. (See page opposite Inside Front Cover.)
American Bronze Co., 90-103 Arthur St., Buffalo, N. Y.
American Foundry Co., 634 S. 11th St., Newark, N. J.
American Manganese Bronze Co. (Holmesburg), Philadelphia, Pa.

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American Non-Ferrous Metals Corp., Chester, Pa.

American Safety Lamp & Mine Supply Co., 1300 Capouse Ave., Scranton, Pa.

Amesbury Brass & Foundry Co., Amesbury, Mass.

Anderson Foundry Co., Wm. B., 24-30 S. Clinton St., Chicago, Ill. "W. B."

Ansonia Mfg. Co., Ansonia, Conn.

Artistic Bronze Co., 2050 Fairfield Ave., Bridgeport, Conn.

Ashland Brass Foundry, Virginia Ave., Ashland, O.

Atlas Brass Foundry Co., Columbus, O. (See page 595.)

Attwood Brass Works, Grand Rapids, Mich. (See page 1195.)

Auto Products Co., Station H, Cincinnati, O. (See page 1193.)

Bassick Co., Bridgeport, Conn. (See page 333.)

Bay City Foundry & Machine Co., 1610 Water St., Bay City, Mich. (See page 1095.)

Bay View Foundry Co., McDonough, Water & Shelby Sts., Sandusky, O.

Bayonne Casting Co., Bayonne, N. J.

Bergen Point Brass Foundry, 161 Hobart Ave., Bayonne, N. J.

Blake, Edwin J., 565 Windsor St., Hartford, Conn.

Bohn Foundry Co., Chas. B., 3651 Hart Ave., Detroit, Mich.

Brass Foundry Co., 711-17 S. Adams St., Peoria, Ill.

Bridgeport Deoxidized Bronze & Metal Co., 459 Iranistan Ave., Bridgeport, Conn.

Brown Bros., 46-48 Garden St., Stamford, Conn.

Buckeye Brass & Mfg. Co., 6410 Hawthorne Ave., Cleveland, Ohio.

Buckeye Iron & Brass Works, 824 E. Third St., Dayton, O.

Buermann Mfg. Co., August, 220 Jelliff Ave., Newark, N. J. "Star."

Buffalo Bronze Die Cast Corp., 100 Arthur St., Buffalo, N. Y. (See page 229.)

Buffalo Non-Ferrous Casting & Mfg. Co., 41 Letchworth St., Buffalo, N. Y. "Higrade."

Bunting Brass & Bronze Co., 737 Spencer St., Toledo, O. (See page 295.)

C. & C. Sales Corp., 1755 Broadway, New York, N. Y. (Distributors.) (See page 505.)

Cantrell Hdw. & Tool Co., Reading, Pa.

Capitol Brass Works, 2306 Franklin St., Detroit, Mich.

Carter, E. T., Plainville, Conn.

Caskey's Brass & Bronze Works, Richmond & York Sts., Philadelphia, Pa.

Central Brass Foundry, 1229 W. Randolph St., Chicago, Ill.

Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O.

Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 345.)

Champion Brass Works, Coldwater, Mich. (See page 615.)

Chapman Co., Berlin, Wis

Chicago Hardware Foundry Co., 2500 Great Lakes Ave., North Chicago, Ill.

Cincinnati Aluminum Casting Co., Cincinnati, O. "Adamant."

City Brass Foundry, 21 Slater Ave., Pawtucket, R. I.

City Brass Foundry Co., 5318 St. Clair Ave., N. E., Cleveland, O.

Clayton & Lambert Mfg. Co., Detroit, Mich. (See page 981.)

Cleveland Aluminum Casting Co., 901 Addison Rd., Cleveland, O.

Cochrane Brass Foundry, S. Richard Ave. & N. Central Tracks, York, Pa.

Cochrane Brass & Mfg. Co., J. A., 1468 E. 40th St., Cleveland, O.

Columbia Castings Co., Ferdinand Ave. & Wabash R. R., Detroit, Mich.

Columbus Brass Co., 540 Dublin Ave., Columbus, O.

Commonwealth Brass Corp., Detroit, Mich. (See page 1139.)

Connecticut Brass Foundry Co., 660 E. Main St., Waterbury, Conn.

Cope-Swift Co., McDougall Ave. & Wight St., Detroit, Mich. (See page 619.)

Cramp & Sons Ship & Engine Bldg. Co., William, Philadelphia, Pa. (See page 209.)

Crescent Brass Mfg. Co., 301 S. Seventh St., Reading, Pa.

Dallas Brass & Copper Co., Chicago, Ill. (Mill Agents.) (See page 167.)

Dayton Bronze Bearing Co., 916-18 E. Third St., Dayton, O.

D'Este Co., Julian, 26 Canal St., Boston, Mass.

Delaware Brass & Aluminum Co., 20th & Walnut Sts., Muncie, Ind.

Detroit Motor Castings Co., 299-303 Beaufait Ave., Detroit, Mich.

Diamond Brass Foundry & Machine Co., 1115 Washington Blvd., Chicago, Ill.

Dorchester Brass & Aluminum Foundry, Old Sturtevant Bldg. (Jamaica Plain), Boston, Mass.

Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.

Eagle—See Stillman White Foundry Co.

Efemco—See Foster, Merriam & Co.

Electric Materials Co., North East, Pa.

Elephant—See Phosphor Bronze Smelting Co.

Ellison Brass Mfg. Co., Jamestown, N. Y.

Enterprise Brass & Plating Co., Sixth & Baymiller Sts., Cincinnati, O.

Erie Bronze Co., 355 W. 19th St., Erie, Pa. (See page 261.)

Essex Brass Foundry Co., Sixth & Harvard Sts., Cambridge, Mass.

Eureka Brass Co., 601 Red Bud Ave., St. Louis, Mo.

Eureka Co., North East, Pa.

Exeter Brass Works, 10 R. R. Ave., Exeter, N. H.

Faries Mfg. Co., 624 N. Union St., Decatur, Ill.

Federal Bearing & Bushing Corp., Detroit, Mich. (See page 237.)

Fischer-Sweeny Bronze Co., 13th & Grand Sts., Hoboken, N. J.

Fitz Water Wheel Co., Penn St. & Penna. R. R., Hanover, Pa.

Flannery Co., P. J., 33 Whiting St., New Britain, Conn.

Flour City Ornamental Iron Co., Minneapolis, Minn.

Fore River Shipbuilding Corp., Quincy, Mass.

Foster Brass Foundries, 815 Vernal St., Cedar Rapids, Ia.

Foster, Merriam & Co., Meriden, Conn. "Efemco." (See page 821.)

Frontier Brass Foundry, 818 Elmwood Ave., Niagara Falls, N. Y.

G. & R. Foundry & Machine Co., 6½ St. & Penn. R. R., Terre Haute, Ind.

Gallagher's Sons, James, 87 Centre St., New York, N. Y.

General Aluminum & Brass Mfg. Co., Detroit, Mich. "Ring True." (See page 203.)

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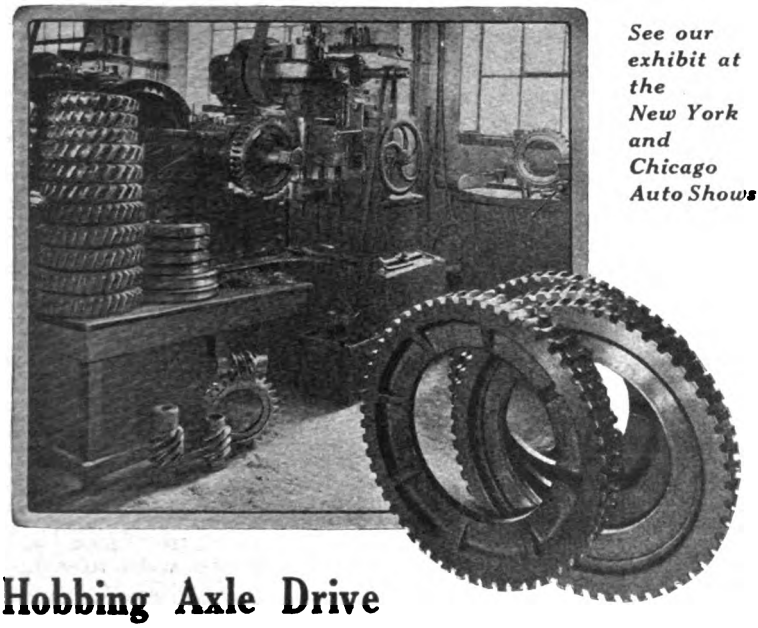

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CASTINGS, Bronze and Brass (Continued)

General Bronze Foundry Co., 5810 Superior Ave., Cleveland, O. "Werne," "Tenax." (See page 651.)

General Castings Co., Ford Bldg., Detroit, Mich.

General Railway Signal Co., Rochester, N. Y.

Gerson-Carey Co., Kalamazoo St. & L. S. Ry., Lansing, Mich.

Gilbert & Sons Brass Foundry Co., A., 4019 Forest Park Blvd., St. Louis, Mo. (See page 207.)

Globe Brass Works, 1212 W. Liberty St., Cincinnati, O.

Grand Rapids Brass Co., 90 Scribner Ave., N. W., Grand Rapids, Mich.

Hampden Brass Co., Springfield, Mass.

Hardy & Sons Co., Wm. A., Fitchburg, Mass.

Harley Co., Springfield, Mass. (See pages 205 and 425.)

Harper, Thomas, 204 Lafayette St., New York, N. Y.

Harsch Bronze & Foundry Co., John, 11612 Madison Ave., Cleveland, O.

Henry-Bonnard Bronze Co., Washington St., Mt. Vernon, N. Y.

Herculite—See Levett Co.

Higgins Brass Works, J. C., Eighth & Main Sts., San Diego, Cal.

Higrade—See Buffalo Non-Ferrous Casting & Mfg. Co.

Hoboken Brass Co., Seventh & Madison Sts., Hoboken, N. J.

Hoffman Bronze & Aluminum Casting Co., 998 Addison Rd., Cleveland, O.

Homer Brass Works, 281 Race St., Philadelphia, Pa.

Hotz Foundry & Mfg. Co., Wolf Ave., Fremont, O.

Howard Metal Co., Second & Canal Sts., Reading, Pa.

I B C—See Indianapolis Brass Co.

Ideal Bronze Co., 1265-69 E. 55th St., Cleveland, O. (See page 205.)

Illinois Malleable Iron Co., 1801-25 Diversey Blvd., Chicago, Ill.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Indianapolis Brass Co., 1012 E. Michigan St., Indianapolis, Ind. "I B C."

Ives Co., H. B., 5-17 Artisan St., New Haven, Conn.

Jefferson Brass Foundry, 209-11 King St., Brooklyn, N. Y.

Johnson Bronze Co., New Castle, Pa. (See page 181.)

Jonah & George, Little's Ct., Merrimac, Mass.

Joppa Machine & Bronze Co., 1527 N. Fawn St., Philadelphia, Pa.

K & M Brass & Aluminum Castings Co., 10611-13 Quincy Ave., Cleveland, O.

Kauffman Metal Parts Co., Bellefontaine, O.

Kelly Brass Works, 226 W. Ontario St., Chicago, Ill.

Keyless Lock Co., 1401 Newman St., Indianapolis, Ind.

Kinsey & Mahler Co., 400 S. Adams St., Peoria, Ill.

Kokomo Brass Works, 1415 Webster St., Kokomo, Ind.

Lakewood Screw Machine Products Co., Cleveland, O.

Lalor Fuel Oil System Co., 527-33 Colvin St., Baltimore, Md.

Langsenkamp-Wheeler Brass Works, 1206-28 Shelby St., Indianapolis, Ind.

Lebanon Brass Mfg. Co., Lebanon, Pa.

Leitelt Bros., 7725 S. Chicago Ave., Chicago, Ill.

Levering Bros., 200 Key Highway, Baltimore, Md.

Levett Co., Walker M., 417-21 E. 23d St., New York, N. Y. "Magnalite," "Levetta," "Herculite." (See page 705.)

Levetta—See Levett Co.

Light Mfg. & Fdry. Co., Water St., Pottstown, Pa.

Limerick Co., J. Arthur, 960 N. Howard St., Baltimore, Md.

Lough Bros., 90 West St., New York, N.Y. (Dealers.) (See page 207.)

Lumen Bearing Co., Buffalo, N. Y. (See page 1248.)

Lusk Brass Foundry, J. H., 325 Liberty St., Jackson, Mich.

Lynux—See Aluminum Castings Co.

McGill Metal Co., Valparaiso, Ind.

McKenna Brass & Mfg. Co., First Ave. & Ross St., Pittsburgh, Pa.

Machinists Foundry Co., Tenth St. & Macedonia Ave., Muncie, Ind.

Magnolite—See Levett Co.

Maluminum Castings Co., 1116-30 E. Georgia St., Indianapolis, Ind.

Martin & Anson, 2226-28 Indiana Ave., Chicago, Ill.

Maxwell Engineering Co., Rome, N. Y.

Medina Stamping & Machine Co., 817 Main St., Medina, N. Y.

Michaels Bronze Co., 230-40 Scott St., Covington, Ky.

Mills Brass Co., Wm. A., Port Chester, N. Y.

Milwaukee Valve Co., 189 Burrell St., Milwaukee, Wis.

Moak Machine & Tool Co., 2547 Connors St., Port Huron, Mich.

Moline Iron Works, Moline, Ill. (See page 601.)

Monumental Bronze Co., 354 Howard St., Bridgeport, Conn.

More-Jones Brass & Metal Co., 3132-44 N. Broadway, St. Louis, Mo.

Mt. Vernon Co., Mt. Vernon, N. Y.

Mueller Metal Co., 288 Dyer St., Providence, R. I.

Mueller Metals Co., Lapier Ave., Port Huron, Mich.

Mulholland, W. J., Commercial Trust Bldg., Philadelphia, Pa.

Muskegon Aluminum Foundry Co., Clay & Ninth Sts., Muskegon, Mich.

Nabralco—See National Bronze & Aluminum Foundry Co.

National Brass Mfg. Co., 191-93 Mill St., Rochester, N. Y.

National Bronze & Aluminum Castings Co., 3530-60 Garfield Ave., Detroit, Mich.

National Bronze & Aluminum Foundry Co., 2539 E. 79th St., Cleveland, O. "Nabralco."

Neptune Meter Co., 50 E. 42d St., New York, N. Y.

New York Brass Foundry Co., 102-04 Centre St., New York, N. Y.

Niagara Brass Mfg. Co., Lockport, N. Y.

Nolte Brass Co., 27-29 W. Jefferson St., Springfield, O.

Non-Ferrous Alloys Co., 8162 W. Fort St., Detroit, Mich.

North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn.

Northwestern Brass & Bronze Foundry, 4449-57 Humboldt Ave., Detroit, Mich.

Oberdorfer Brass Co., M. L., 804 E. Water St., Syracuse, N. Y.

Onondaga Brass Co., Decker & Brown Sts., Syracuse, N. Y.

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FRANKLIN DIE-CASTINGS

Applied to the Automotive Industry

THE development of all branches of the automotive industry, both as to increased efficiency and decreased price, has been hastened by Franklin Die-Castings.

The die-casting process has long been a success. It was originated by Franklin engineers nearly thirty years ago. Millions of castings ranging from bearings to magneto parts and tire pump housings have been doing their work regularly and efficiently for years.

Franklin Die-Castings save labor, save material, save costs. They are highly specialized, made of different materials for different purposes and applied to various industries.

The advantage they give in increasing production and saving production costs in other ways is easily figured.

We cast in aluminum, zinc, tin, and lead base alloys.

We welcome inquiries as to the practicality of applying the die-casting principle to any product submitted. Sample part or blueprint is sufficient for our report and estimate. Consultation on request.

OUR BOOKLET

"Franklin Die-Castings in Many Fields," relates in detail some of these accomplishments. Write for it.

FRANKLIN DIE-CASTING CORPORATION
Gifford and Magnolia Streets Syracuse, N. Y.

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CASTINGS, Bronze and Brass (Continued)

Owosso Bronze Bearing Co., Owosso, Mich.
Paramount Pattern & Model Works, 302-04 McDougal St., Brooklyn, N. Y.
Paulson & Son, Thomas, 97 Second Ave., Brooklyn, N. Y. (See page 207.)
Pattern & Castings Co., Saginaw, Mich.
Pfau Mfg. Co., Cincinnati, O.
Phosphor Bronze Smelting Co., 2200 Washington Ave., Philadelphia, Pa. "Elephant."
Pioneer Brass Works, 418-24 S. Penn St., Indianapolis, Ind.
Pittsburgh Brass Mfg. Co., 32d St. & Penn Ave., Pittsburgh, Pa.
Precision Castings Co., Syracuse, N. Y. (See page 403.)
Premier Metal Etching Co., 14th St. & Van Alst Ave., Long Island City, N. Y.
Pro. Econ. Foundries, Lake & Crown Sts., Bloomfield, N. J.
Progressive Brass Foundry, Keowee & Herbert Sts., Dayton, O.
Providence Brass & Aluminum Foundry, 466 Eddy St., Providence, R. I.
Racine Aluminum & Brass Foundry Co., 1329 12th St., Racine, Wis.
Railway & Industrial Engineering Co., People's Bank Bldg., Pittsburgh, Pa.
Reeves & Co., Paul S., 1415-25 Catharine St., Philadelphia, Pa.
Regal Brass Foundry Co., 72 E. Larned St., Detroit, Mich.
Rider-Bagg Co., 369 Birnie Ave., Springfield, Mass.
Rincon Foundry Co., 349-65 Seventh St., San Francisco, Cal.
Ring True—See General Aluminum & Brass Mfg. Co.
Rome Locomotive & Machine Works, Rome, N. Y.
Ross Machine Co. (Wollaston), Quincy, Mass. (See page 617.)
Rostand Mfg. Co., Milford, Conn.
Royal Machine & Foundry Co., 288-90 Division St., Oshkosh, Wis. (See page 503.)
"S-C" Regulator Co., Perry & High Sts., Fostoria, O.
Sani Products Co., 209 W. Randolph St., Chicago, Ill.
Sayre Stamping Co., Lockhart Bldg., Sayre, Pa.
Service Pattern Mfg. Co., 1469 E. Grand Blvd., Detroit, Mich.
Shambow Shuttle Co., Woonsocket, R. I.
Sharp Brass Works, J. C., Boyce & 20th Sts., Chattanooga, Tenn.
Sherwood Brass Works, 6331 E. Jefferson Ave., Detroit, Mich.
Smith Hardware Co., Frank F., 35 Clay St., Newark, N. J.
Smith Mfg. Co., A. P., Norman & Lawrence Sts., East Orange, N. J.
Spencer's Sons, I. S., Fair St., Guilford, Conn.
Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.
Spindler & Deringer, Colgate & Mercer Sts., Jersey City, N. J.
Staats & Co., Geo., 74 Bayard St., Brooklyn, N. Y.
Standard Brass & Iron Works, 1320 St. Paul Ave., Milwaukee, Wis.
Standard Brass Foundry Co., 990 E. 67th St., Cleveland, O.
Standard Foundry Co., Hartford, Conn.
Standard Separator Co., 45th St. & Burnham Rd., Milwaukee, Wis.
Stanley Foundry Co., North St. & Davis Ave., N. W., Grand Rapids, Mich.
Star—See Buermann Mfg. Co.
Sterling Sales Co., Auburn, Ind.
Sterling Specialty Co., New Comerstown, O.
Stiles Mfg. Co., St. Louis, Mo. (See page 521.)
Stillman White Foundry Co., 1 Bark St., Providence, R. I. "Eagle."
Stowell Co., South Milwaukee, Wis.
Suffolk Casting & Supply Co., 156 Pearl St., Boston, Mass.
Sunderman Corp., Newburgh, N. Y. (See page 193.)
Super-Refined Metals Co., 2631 Woodward Ave., Detroit, Mich. (See page 637.)
Superior Brass Works, Detroit, Mich. (See page 1125.)
Superior Bronze Corp., 19th & Poplar Sts., Erie, Pa.
Superior Engineering Works, Small Bldg., York, Pa.
T. B. C.—See Titanium Bronze Co.
Tenax—See General Bronze Foundry Co.
Thiery & Kendrick Mfg. Co., Detroit, Mich. (See page 419.)
Thomson Press Co., John, 253 Broadway, New York, N. Y.
Titanium Bronze Co., Sugar & Lafayette Sts., Niagara Falls, N. Y. "T. B. C."
Turner & Seymour Mfg. Co., Lawton St. & R. R., Torrington, Conn.
Union Metal Works, Chelsea, Mass.
Unique Brass Foundry Co., 323-41 Grant St., Buffalo, N. Y.
United Brass & Aluminum Mfg. Co., Goulden St., Port Huron, Mich.
Vanadium Metals Co., Vanadium Bldg., Pittsburgh, Pa. "Victor."
Verilite Metals Co., 433 E. Girard Ave., Philadelphia, Pa.
Victor—See Vanadium Metals Co.
Victoria Metal Co., 332-36 E. Eighth St., Erie, Pa.
W. B.—See Anderson Foundry Co.
Walsh, James F., 32 N. Clinton St., Chicago, Ill.
Waterbury Brass Goods Corp., 160 Washington Ave., Waterbury, Conn.
Waterbury Mfg. Co., 236 Grand St., Waterbury, Conn.
Weber-Knapp Co., Jamestown, N. Y.
Welbronco—See Wellman Bronze Co.
Wellman Bronze Co., 6017 Superior Ave., Cleveland, O. "Welbronco."
Wells Chemical Bronze Works, Temple & Harding Sts., Worcester, Mass.
Werne—See General Bronze Foundry Co.
Western Brass Mfg. Works, Marshall Blvd., 21st St., Chicago, Ill. (See page 1097.)
Western Pump Co., Front & Gaines Sts., Davenport, Ia.
White Mfg. Co., Goshen, Ind.
Wilco Co., 173 Griswold St., Detroit, Mich. (Distributors.) (See page 221.)
Williams, Franklin, 263 Jefferson St., Newark, N. J. (See page 163.)
Williams Valve Co., D. T., Spring Grove Ave. & Township St., Cincinnati, O.
Williams & Son, E. A., 105-11 Plymouth St., Jersey City, N. J.
Wolkow & Sons, F., 133 W. Market St., Louisville, Ky.
Woodruff & Sons Co., Walter W. Mount Carmel, Conn.
York Hardware & Brass Works, 501-50 E. Market St., York, Pa.

CASTINGS, COMPOSITION—See Castings, Bronze and Brass

CASTINGS, Die

Acme Die-Casting Corp., Third Ave. & 35th St., Brooklyn, N. Y. (See page 217.)
Alemite Die Casting & Mfg. Co., 341-51 W. Chicago Ave., Chicago, Ill. (See page 229.)
Alloy Die Casting Co., Detroit, Mich.
American Bearing & Die Casting Corp., Indianapolis, Ind. (See page 299.)

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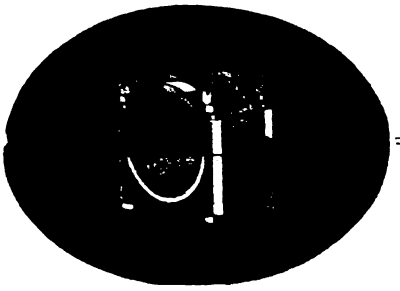

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A census of modern American automobiles and motor trucks would show few into which Doehler Die Castings had not been built. The last reckoning showed that over 80 per cent of the annual output of die-castings came from the big Doehler plants.

Quality is the outstanding reason for the general standardization on Doehler Die Castings. Manufacturers have learned by experience that anything less is not fully satisfactory. In the long run, Doehler Die Castings are not only most dependable, but also least expensive.

The die cast babbitt lined bearings pictured here are but one of hundreds of parts produced in quantity for the automotive industry. Bearings are made by thousands every month—babbitt lined bronze backs and the new aluminum backed type. Many parts formerly machined out are now made as "Do-Di" Finished Brass Castings.

The Company offers the advisory service of its engineering staff or is prepared to die-cast parts to your specifications.

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CASTINGS, Die (Continued)

Barnhart Bros. & Spindler, 32 Throop St., Chicago, Ill.
Bridgeport Silverware Mfg. Corp., 65 Holland St., Bridgeport, Conn.
Bronze Die Casting Co., 929 Union Arcade, Pittsburgh, Pa.
Buffalo Bronze Die Cast Corp., 100 Arthur St., Buffalo, N. Y. (See page 229.)
Die Casting Co. of New Jersey, 43 Sharon St., Irvington, N. J.
Do-Di—See Doehler Die-Casting Co.
Do-Lite—See Doehler Die-Casting Co.
Doehler Die-Casting Co., Brooklyn, N. Y. "Do-Di," "Do Lite." (See page 213.)
Erie Bronze Co., 355 W. 19th St., Erie, Pa. (See page 261.)
Franklin Die-Casting Corp., Gifford & Magnolia Sts., Syracuse, N. Y. (See page 211.)
Fritz, Perry E., 2939 Sunrise St., Los Angeles, Cal.
General Aluminum & Brass Mfg. Co., Detroit, Mich. "Ring True." (See page 203.)
Grey Mfg. Co., C. M., 358 Central Ave., East Orange, N. J.
Harley Co., Page Blvd., Springfield, Mass. (See pages 205 and 425.)
Hoyt Metal Co., St. Louis, Mo. (See page 1179.)
Keystone Die Casting Co., 309 E. Main St., Norristown, Pa.
Kidder-Oswald Co., Dayton, O.
Kinite Co., 1338-40 St. Paul Ave., Milwaukee, Wis.
Legler-Eilerman Co., E., Bacon St., Dayton, O.
Levering Bros., 200 Key Highway, Baltimore, Md.
Light Mfg. & Foundry Co., Water St., Pottstown, Pa.
Lough Bros., 90 West St., New York, N.Y. (Dealers.) (See page 207.)
Marf Machine Co., 17-27 Vandewater St., New York, N. Y. (See page 413.)
Metalware Corp., 228 W. Superior St., Chicago, Ill. (See page 1161.)
Michigan Smelting & Refining Co., 7885 Jos. Campau Ave., Detroit, Mich.
Milwaukee Die Casting Co., 297 Fourth St., Milwaukee, Wis. (See page 299.)
Modern Die & Tool Co., Indianapolis, Ind. "Victor." (See page 111.)
Mogul Metal Co., Detroit, Mich. (See page 111.)
Mt. Vernon Co., Mt. Vernon, N. Y.
Mueller Metals Co., Lapier Ave., Port Huron, Mich.
Muzzy-Lyon Co., Detroit, Mich. (See page 111.)
National Lead Co., 111 Broadway, New York, N. Y. (See page 491.)
Phoenix Die Casting Co., 21 Illinois St., Buffalo, N. Y.
Precision Castings Co., Syracuse, N. Y. (See page 403.)
Recording Devices Co., 554 W. Fifth St., Dayton, O.
Ring True—See General Aluminum & Brass Mfg. Co.
Sanford Co., David C., 33-39 Drouve St., Bridgeport, Conn.
Sargent & Co., Water & Wallace Sts., New Haven, Conn.
Stewart Mfg. Corp., 4500 Fullerton Ave., Chicago, Ill. (See page 243.)
Stroh Die Moulded Casting Co., 161-71 Michigan St., Milwaukee, Wis.
Universal Bearings Co., 345 Broadway, Lorain, O.
Veeder Mfg. Co., 23 Sargeant St., Hartford, Conn. (See page 637.)
Victor—See Modern Die & Tool Co.
Victor Die Casting Machine Co., River St., Ypsilanti, Mich.
Victoria Metal Co., 332-36 E. Eighth St., Erie, Pa.
Vulcan Die Casting Corp., 1120 W. Belden Ave., Syracuse, N. Y. (See page 1105.)
White Brass Casting Co., 1649 W. Grand Ave., Chicago, Ill.
Wing & Co., J. T., 129 Woodward Ave., Detroit, Mich.
Zenite Metal Co., 201-05 N. West St., Indianapolis, Ind. (See page 637.)

CASTINGS, Grey Iron

Acme-Palmers & Dernooy Foundry Co., 5217 Sweeney Ave., Cleveland, O.
Adamite—See Pittsburgh Iron & Steel Foundries Co.
Advance Foundry Co., Dayton, O.
Allyne-Ryan Foundry Co., Aetna Rd. & E. 91st St., Cleveland, O.
Almont Mfg. Co., Almont, Mich.
American Car & Foundry Co., 5718 Russel St., Detroit, Mich.
American Foundry & Mfg. Co., 11th & Herbert Sts., St. Louis, Mo.
American Tool & Machine Co., 10 High St., Boston, Mass.
American Tube Co., 3704 S. Rockwell St., Chicago, Ill.
Arnold Co., Hoyt St., Norwalk, Conn.
Atlantic Foundry Co., 182 Beaver St., Akron, O.
Atlas Foundry Co., 131 S. Artillery Ave., Detroit, Mich.
Atlas Foundry Co., Lyons Ave. & Colt St., Irvington, N. J.
Auto Products Co., Station H., Cincinnati, O. (See page 1193.)
Automotive Foundry Co., La Crosse, Wis.
Barker, James, Sixth & Cayuga Sts., Philadelphia, Pa.
Barlow Foundry Co., 551 N. J. R. R. Ave., Newark, N. J.
Barnes Foundry Co., Jersey City, N. J. (See page 217.)
Barscott Co., 39 W. Adams St., Chicago, Ill.
Bay City Foundry & Machine Co., 1610 Water St., Bay City, Mich. (See page 1095.)
Bay View Foundry Co., McDonough, Water & Shelby Sts., Sandusky, O.
Bemiller Foundry & Machine Co.—See Eckhouse & Co.
Bowler Foundry Co., Columbus Rd., Cleveland, O.
Brady Foundry Co., James A., 45th St. & Western Blvd., Chicago, Ill.
Bridgeport Malleable Iron Works, Bridgeport, Conn.
Brown Clutch Co., 1737 S. Camp St., Sandusky, O.
Buch's Sons Co., A., Elizabethtown, Pa.
Byram Foundry Co., 921 Biddle St., Indianapolis, Ind.
C-W-C—See Campbell, Wyant & Cannon Foundry Co.
Campbell Mfg. & Foundry Co., Muskegon, Mich.
Campbell, Wyant & Cannon Foundry Co., Muskegon, Mich. "C-W-C." (See page 215.)
Cantrell Hdw. & Tool Co., Reading, Pa.
Challenge Machinery Co., Grand Haven, Mich.
Chapman Co., Berlin, Wis.
Cheney & Son, S., Manlius, N. Y.
City Brass Foundry Co., 5310 St. Clair Ave., N. E., Cleveland, O.
Clayville Iron Foundry & Machine Co., Clayville, N. Y.
Cochrane Brass Foundry, S. Richland Ave. & N. Central Tracks, York, Pa.

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A Foundry Operated by a Practical Organization with Latest Equipmen

Our reputation for uniform metal, uniform measurements, uniform production and uniform weight insures our customers the maximum production from their machine tool equipment at minimum cost.

Our organization is complete in all departments, including chemical laboratory, pattern shop and machine shop.

Daily Capacity 500 Tons

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CAMPBELL, WYANT & CANNON FOUNDRY COMPANY

MUSKEGON, MICH.

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CASTINGS, Grey Iron (Continued)

Cohoes Iron Foundry & Machine Co., 37 Van Rensselaer St., Cohoes, N. Y.

Connersville Foundry Co., 18th & Columbia Sts., Connersville, Ind.

Detroit Brass & Malleable Works, Holden & Greenwood Aves., Detroit, Mich.

Detroit Foundry Co., 2642 N. Grand Blvd., Detroit, Mich.

Detroit Gray Iron Foundry Co., 6403-23 Wight St., Detroit, Mich.

Devlin Mfg. Co., Thos., Third & Lehigh Aves., Philadelphia, Pa.

Dutchess Foundry Co., 56-60 Pine St., Poughkeepsie, N. Y.

Eastern Malleable Iron Co., Naugatuck, Conn.

Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Factory Distributors for Bemiller Foundry & Machine Co., Bellville, O.) (See page opposite Title Page.)

Efemco—See Foster, Merriam & Co.

Enterprise Foundry Co., 6463 E. Warren Ave., Detroit, Mich.

Excelsior Tool & Machine Co., 31st St. & Ridge Ave., East St. Louis, Ill.

Fanner Mfg. Co., Brookside Park, Cleveland, O.

Farrar & Trefts, Perry & Illinois Sts., Buffalo, N. Y.

Fay-Kultgen Foundry Co., E. Broad St., St. Joseph, Mich.

Ferro Machine & Foundry Co., 47 Hubbard Ave., Cleveland, O.

Flagg & Co., Stanley G., Morris Bldg., Philadelphia, Pa.

Flannery Co., P. J., 33 Whiting St., New Britain, Conn.

Flour City Ornamental Iron Co., Minneapolis, Minn.

Forest City Foundry & Mfg. Co., Cleveland, O.

Foster, Merriam & Co., Dept. 5, Meriden, Conn. "Efemco." (See page 821.)

Foundry & Machine Products Co., 2263 Fordyce Ave., Detroit, Mich.

France Foundry & Machine Co. (N. Baltimore), Baltimore, O.

Frontier Iron Works, 36 Letchworth St., Buffalo, N. Y.

Fulton Foundry & Machine Co., 25 Furman St., Brooklyn, N. Y.

G. & R. Foundry & Machine Co., 6½ St. & Penn R. R., Terre Haute, Ind.

General Railway Signal Co., Rochester, N. Y.

Globe Malleable Iron & Steel Co., 101 Greenway Ave., Syracuse, N. Y.

Great Lakes Foundry Co., 30th & Moak Sts., Port Huron, Mich.

Griswold Mfg. Co., 1055 W. 12th St., Erie, Pa.

Hart-Parr Co., Lawler St., Charles City, Ia.

Holmes Foundry Co., (South Port Huron), Port Huron, Mich.

Holyoke Motor Foundry Co., Holyoke, Mass.

Hood Furnace & Supply Co., Corning, N. Y.

Illinois Malleable Iron Co., 1801-25 Diversey Blvd., Chicago, Ill.

Indiana Foundry Co., Muncie, Ind.

Industrial Foundry Co., St. Johns, Mich. (See page 217.)

Inland Steel Casting Co., 19th & Cedar Sts., Terre Haute, Ind.

Interstate Foundry Co., E. 61st St. & Roland Ave., Cleveland, O.

Iron City Foundry Co., Hamilton, O.

Johnson & Co., Isaac G., Spuyten Duyvil, New York, N. Y.

Kauffman Metal Parts Co., Bellefontaine, O.

Kennedy Foundry Co., Charles & Wells Sts., Baltimore, Md.

L. N. N. Foundry, Cleveland, O.

Lakey Foundry & Machine Co., First & Water Sts., Muskegon, Mich.

Lakewood Screw Machine Products Co., Cleveland, O.

Lansdale Foundry Co., Lansdale, Pa.

Lansing Foundry Co., Hazel & Hosmer Sts., Lansing, Mich.

Levering Bros., 200 Key Highway, Baltimore, Md.

Lipman Pump Works, 100 Shirland Ave., Beloit, Wis.

Long Island Foundry Co., 11th St. & East Ave., Long Island City, N. Y.

Lough Bros., 90 West St., New York, N. Y. (Dealers.) (See page 207.)

McCord & Co., 122 S. Michigan Ave., Chicago, Ill.

Machinists Foundry Co., Tenth St. & Macedonia Ave., Muncie, Ind.

Manufacturers Foundry Co., Waterbury, Conn. (See page 343.)

Moak Machine & Tool Co., 2547 Connors St., Port Huron, Mich.

Monarch Foundry Co., Greenwood & G. T. R. R., Detroit, Mich.

Montpelier Mfg. Co., Montpelier, Ind.

Mulholland, W. J., Commercial Trust Bldg., Philadelphia, Pa.

Muncie Foundry & Machine Co., E. Ninth & Mark Sts., Muncie, Ind.

Munson Mill Machinery Co. 405 Broadway, Utica, N. Y.

Murphy Foundry Co., Beaver Falls, Pa.

National Foundry Co. of N. Y., 10-40 Sanford St., Brooklyn, N. Y.

National Sewing Machine Co., Belvidere, Ill.

Naugatuck Malleable Iron Co., Naugatuck, Conn.

Nazareth Foundry & Machine Co., Nazareth, Pa.

New Haven Iron Works, New Haven, Mich.

Newark Stamping & Foundry Co., Newark, O.

Niagara Motors Corp., Dunkirk, N. Y. (See page 943.)

North Wales Machine Co., Center & Elm Aves., North Wales, Pa.

Northern Foundry Co., 1360 Main St., Marinette, Wis.

Oxford Fdry. & Machine Co., Oxford, N. J.

Peerless Foundry Co., Carthage Pike & Township Ave., (Elmwood Place), Cincinnati, O.

Pequonnock Foundry, Charlotte & Fifth Sts., Bridgeport, Conn.

Penn Foundry & Machine Co., Bath, Pa.

Peru Foundry Co., Peru, Ind.

Pittsburgh Iron & Steel Foundries Co., Oliver Bldg., Pittsburgh, Pa. "Adamite."

Portland Forge & Foundry Co., Portland, Ind.

Portland Foundry Co., Portland, Conn.

Production Foundries Co. Ann Arbor, Mich. (See page 323.)

Racine Brass & Iron Co., 1327 Racine St., Racine, Wis.

Racine Foundry Co., Tenth St. & C., M. & St. P. Ry., Racine, Wis.

Reedy Foundry Co., 4600 Iowa St., Chicago, Ill.

Reliance Foundry Co., 600 N. Eighth St., Richmond, Ind.

Rincon Foundry Co., 349-65 Seventh St., San Francisco, Cal.

Riverside Foundry Co., Wrightsville, Pa.

Ryan Foundry Co., D. J., Mill St., Ecorse, Mich.

St. Louis Malleable Casting Co., 7300 N. Broadway, St. Louis, Mo.

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All kinds of Cored work, medium and small.

WE SPECIALIZE IN

PISTON CASTINGS (oversize)

RING POTS (from 2½" to 5¼")

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BARNES FOUNDRY CO., Jersey City, N. J.

An Ideal Foundry

For Production in Grey Iron Castings

BECAUSE: Our GROWTH from a small foundry to a reliable institution INSURES STABILITY.

Our EXPERIENCE in solving foundry problems INSURES CONFIDENCE.

Our MODERN FACILITIES AFFORD satisfaction to us and our customers in the form of QUICK SERVICE and FULFILLED PROMISES.

Our PATTERN SHOP IS PART OF OUR FOUNDRY and any pattern changes and improvements are installed right here according to our foundry practices without the loss of time.

We shall be glad to communicate with you.

INDUSTRIAL FOUNDRY COMPANY

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For the Automobile and Motor Truck Maker

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Rochester
159 St. Paul St.

Detroit
744 David Whitney Building

Chicago
549 Washington Blvd.

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CASTINGS, Grey Iron (Continued)

Sani Products Co., 209 W. Randolph St., Chicago, Ill.
Sanitary Co. of America, Linfield, Pa.
Schaefer Mfg. Co., Pearl St., Berlin, Wis.
Shaw, Welsh & Co., Galesburg, Ill.
Sibley Machine Co., 204-32 E. Tutt St., South Bend, Ind.
Smith Mfg. Co., A. P., Norman & Lawrence Sts., East Orange, N. J.
Smith Mfg. Co., Philip, Sidney, O.
Sowers Mfg. Co., 1300 Niagara St., Buffalo, N. Y.
Speidel, J. G., W. Buttonwood & Gordon Sts., Reading, Pa.
Spencer's Sons Co., I. S., Fair St., Guilford, Conn.
Spring City Foundry Co., St. Paul Ave. & State St., Waukesha, Wis.
Standard Foundry Co., Racine, Wis. (See page 335.)
Stowell Co., South Milwaukee, Wis.
Stroh Castings Co., 80 Chene St., Detroit, Mich.
Suffolk Casting & Supply Co., 156 Pearl St., Boston, Mass.
Susquehanna Casting Co., Wrightsville, Pa.
Sweet & Doyle Fdry. & Machine Co., Center St. (Green Island), Troy, N. Y.
Textile Machine Works, Reading, Pa.
Tower City Foundry Co., Tower City, Pa.
Trenton Malleable Iron Co., New York Ave., Trenton, N. J.
Turner & Seymour Mfg. Co., Lawton St. & R. R., Torrington, Conn.
United Brass & Aluminum Mfg. Co., Goulden St., Port Huron, Mich.
Universal Foundry Co., Pine & Warren Sts., Oshkosh, Wis.
Vassar Foundry Co., Vassar, Mich.
Wabash Foundry Co., Carroll St., Wabash, Ind.
Walsh, James F., 32 N. Clinton St., Chicago, Ill.
Waterbury Castings Co., Railroad Hill St., Waterbury, Conn.
Wayne Works, 16th & North F Sts., Richmond, Ind.
Weller Hdw. & Fdry. Co., Main St., Horseheads, N. Y.
Wellman-Seaver Morgan Co., Cleveland, O.
Wilco Co., 172 Griswold St., Detroit, Mich. (Distributors.) (See page 221.)
Williamson Co., J. E., Bellwood, Pa.
Wilson Foundry & Machine Co., Pontiac, Mich.
Wisconsin Aluminum Foundry, 16th & Franklin Sts., Manitowoc, Wis.
Wisconsin Cylinder Foundry Co., 1308 18th St., Racine, Wis.
Wisconsin Foundry & Machine Co., Madison, Wis.
Zenith Foundry Co., Miller Ave., Detroit, Mich.

CASTINGS, IRON — See Castings, Grey Iron; also Castings, Malleable Iron

CASTINGS, Malleable Iron

Acme Steel & Malleable Iron Works, 245 Military Rd., Buffalo, N. Y.
Albion Malleable Iron Co., Albion, Mich.
American Malleable Castings Co., 740 W. Center St., Marion, O.
American Malleables Co., Kresge Bldg., Detroit, Mich.
Arcade Malleable Iron Co., Albany St., Worcester, Mass.
Auto Products Co., Station H, Cincinnati, O. (See page 1193.)
Auto Specialties Mfg. Co., St. Joseph, Mich. (See page 421.)
Badger Malleable & Mfg. Co., 223 N. Chicago Ave., South Milwaukee, Wis.
Barscott Co., 89 W. Adams St., Chicago, Ill.
Belle City Malleable Iron Co., 1500 Kewaunee St., Racine, Wis.
Benton Harbor Malleable Foundry Co., Benton Harbor, Mich.
Bridgeport Malleable Iron Works, Bridgeport, Conn.
Buhl Malleable Iron Co., 230 Wight St., Detroit, Mich.
Central Service Corp., 1607 Merchants' Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 345.)
Chicago Malleable Castings Co., 718 Book Bldg., Detroit, Mich. (See page 221.)
Chicago Malleable Castings Co., Chicago, Ill.
Chicago Malleable Castings Co., West Pullman, Ill.
Chisholm-Moore Mfg. Co., Lakeside Ave. & E. 49th St., Cleveland, O.
Columbus Malleable Iron Co., Curtis Ave., Columbus, O.
Danville Malleable Iron Co., 900 N. Bowman Ave., Danville, Ill.
Dayton Malleable Iron Co., Dayton, O.
Dayton Malleable Iron Co., Ironton, O.
Decatur Malleable Iron Co., Decatur, Ill. (See page 219.)
Detroit Brass & Malleable Works, Holden & Greenwood Aves., Detroit, Mich.
Devlin Mfg. Co., Thos., Third & Lehigh Aves., Philadelphia, Pa.
Eastern Malleable Iron Co., Naugatuck, Conn.
Erie Malleable Iron Co., 12th & Cherry Sts., Erie, Pa.
Fanner Mfg. Co., Brookside Pk., Cleveland, O.
Federal Malleable Co., West Allis, Wis.
Flagg & Co., Stanley G., Morris Bldg., Philadelphia, Pa.
Fort Pitt Malleable Iron Co., Pittsburgh, Pa.
Fraser & Jones Co., Syracuse, N. Y. (See page 219.)
General Malleable Co., Warren, O.
Gilliam Mfg. Co., Savannah Ave. & Eighth St. N. E., Canton, O.
Globe Malleable Iron & Steel Co., 101 Greenway Ave., Syracuse, N. Y.
H. & D. Co., Crawfordsville, Ind. (See page 959.)
Illinois Malleable Iron Co., 1301-25 Diversey Blvd., Chicago, Ill.
Inland Steel Casting Co., 19th & Cedar Sts., Terre Haute, Ind.
Jewell Steel & Malleable Co., 378 Hertel Ave., Buffalo, N. Y.
Kalamazoo Malleable Iron Co., N. Pitcher St., Kalamazoo, Mich.
Kennedy Foundry Co., Charles & Wells Sts., Baltimore, Md.
Kokomo Malleable Iron Co., Kokomo, Ind.
L. N. N. Foundry, Cleveland, O.
Lancaster Foundry Co., Lancaster, Pa.
Lough Bros., 90 West St., New York, N. Y. (Dealers.) (See page 207.)
Mal-Gra Castings Co., Cambridge City, Ind.
Malleable Iron Fittings Co., Branford, Conn. (See page 245.)
Marion Malleable Iron Works, Marion, Ind. (See page 219.)
Meeker Foundry Co., 95 Clay St., Newark, N. J.

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F. & J. Co. Malleable Iron Castings Will Stand This Severe Test

Fig. 6—Wedges Pounded into Scrolls by Blows of 70 Foot-Pounds.

Send your inquiries to FRAZER & JONES CO., SYRACUSE, N. Y.

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DECATUR MALLEABLE IRON COMPANY

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MARION, INDIANA

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FOR

AUTOMOBILES AND TRACTORS

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CASTINGS, Malleable Iron (Continued)

Missouri Malleable Iron Co., 15th St. & Bradley Ave., East St. Louis, Ill.
Moline Iron Works, Moline, Ill. (See page 601.)
Muncie Malleable Foundry Co., Muncie, Ind.
National Malleable Castings Co., Chicago, Ill.
National Malleable Castings Co., Indianapolis, Ind.
National Malleable Castings Co., Cleveland, O.
Naugatuck Malleable Iron Works, Naugatuck, Conn.
North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn.
Northern Malleable Iron Co., 867 Forest St., St. Paul, Minn.
Northwestern Malleable Iron Co., 756 Park St., Milwaukee, Wis.
Ohio Malleable Iron Co., Fields Ave. & Panama R. R., Columbus, O.
Pittsburgh Malleable Iron Co., Pittsburgh, Pa.
Platt Mfg. Co., Wm. E., 35 W. Lake St., Chicago, Ill.
Racine Steel Castings Co., 1524 Kewaunee St., Racine, Wis.
Rhode Island Malleable Iron Works, Hillsgrove, R. I.
Richmond Malleable Castings Co., Scott Bldg., Richmond, Ind.
Rockford Malleable Iron Works, Peoples Ave. & O. B. & Q. Tracks, Rockford, Ill.
Ross-Mecham Foundries, Chattanooga, Tenn.
Saginaw Malleable Iron Co., Center & Salt Sts., Saginaw, Mich.
St. Louis Car Co., 8000 N. Broadway, St. Louis, Mo.
St. Louis Malleable Castings Co., 7800 N. Broadway, St. Louis, Mo.
Smith Wheel, Inc., Syracuse, N. Y. (See page 1071.)
South Side Malleable Casting Co., Windlake & 14th Aves., Milwaukee, Wis.
Springfield Malleable Iron Co., Bechtle Ave. & Big Four R. R., Springfield, O.
Stowell Co., South Milwaukee, Wis.
Suffolk Casting & Supply Co., 156 Pearl St., Boston, Mass.
Symington Co., T. H., Rochester, N. Y.
Temple Malleable Iron & Steel Co., Harrison Bldg., Philadelphia, Pa.
Terre Haute Malleable & Mfg. Co., 19th St. & Maple Ave, Terre Haute, Ind.
Trenton Malleable Iron Co., New York Ave., Trenton, N. J.
Troy Malleable Iron Works, Troy, N. Y.
Union Malleable Iron Co., East Moline, Ill.
United States Malleable Iron Co., Woodville St., Toledo, O.
Vermilion Malleable Iron Co., Hoopeston, Ill.
Vulcan Iron Works, 63 John St., New Britain, Conn.
Wagner Castings Co., Decatur, Ill.
Walsh, James F., 32 N. Clinton St., Chicago, Ill.
Wanner Malleable Iron Co., 723 Summer St., Hammond, Ind.
Waukesha Malleable Iron Co., Waukesha, Wis.
Western Malleable Co., Beaver Dam, Wis.
Wilco Co., 172 Griswold St., Detroit, Mich. (Distributors.) (See page 221.)
Wilmington Malleable Iron Works, Wilmington, Del.
Woodruff & Sons Co., Walter W., Mt. Carmel, Conn.
Zanesville Malleable Co., Zanesville, O.

CASTINGS, Steel

Acme Steel Co., Beech St., Akron, O.
Adamite—See Pittsburgh Iron & Steel Foundries Co.
American Manganese Steel Co., 333 S. Michigan Ave., Chicago, Ill. "Amsco."
American Radiator Co., 1807 Elmwood Ave., Buffalo, N. Y.
American Steel Foundries, 333 S. Michigan Ave., Chicago, Ill.
Amsco—See American Manganese Steel Co.
Atlantic Foundry Co., 182 Beaver St., Akron, O.
Auto Products Co., Station H, Cincinnati, O. (See page 1193.)
Barscott Co., 39 W. Adams St., Chicago, Ill.
Bay View Foundry Co., McDonough, Water & Shelby Sts., Sandusky, O.
Bayonne Steel Casting Co., Bayonne, N. J.
Belle City Malleable Iron Co., 1500 Kewaunee St., Racine, Wis.
Bethlehem Steel Co., Third & Poplar Sts., South Bethlehem, Pa.
Bonney-Floyd Co., Columbus, O.
Buhl Malleable Iron Co., 230 Wight St., Detroit, Mich.
Burnside Steel Co., Railway Exchange Bldg., Chicago, Ill.
Chester Steel Castings Co., Seventh St., Chester, Pa.
Chicago Steel Foundry Co., Kedzie Ave. & 37th St., Chicago, Ill.
Cincinnati Steel Castings Co., Queen City & Spring Grove Aves., Cincinnati, O.
Connecticut Electric Steel Co., 540 Flatbush Ave., Hartford, Conn.
Connersville Foundry Co., 13th & Columbia Sts., Connersville, Ind.
Crucible Steel Casting Co., Union Ave. & Railroad, Lansdowne, Pa.
Crucible Steel Casting Co., 612 Clinton St., Milwaukee, Wis.
Damascus Crucible Steel Casting Co., New Brighton, Pa.
Dayton Steel Foundry Co., Chapel Rd. & C. H. & D. R. R., Dayton, O.
Detroit Steel Castings Co., 4069 Michigan Ave., Detroit, Mich.
Eagan-Rogers Steel & Iron Co., Crum Lynne, Pa.
Eastern Steel Castings Co., 30 Kemble St., Boston, Mass.
Electric Steel Co. of Indiana, Indianapolis, Ind.
Electro Steel Co., Pittsburgh, Pa.
Emery Steel Castings Co., Continental Bldg., Baltimore, Md.
Fair & Son, S., Saginaw, Mich.
Farrell-Cheek Steel Foundry Co., ft. First St., Sandusky, O.
Firth & Son Co., Rowland, Phillipsburg, N. J.
Flagg & Co., Stanley G., Morris Bldg., Philadelphia, Pa.
Fluid Compressed Steel Co., Keokuk, Ia.
Fort Pitt Steel Casting Co., McKeesport, Pa.
Gerlinger Electric Steel Castings Co., 60th St. & National Ave., West Allis, Wis.
Hercules Steel Casting Co., 371-91 Robinson Ave, Milwaukee, Wis.
Hubbard Steel Foundry Co., McCormick Bldg., East Chicago, Ind.
Industrial Steel Casting Co., Toledo, O.
Inland Steel Casting Co., 19th & Cedar Sts., Terre Haute, Ind.
Interstate Foundry Co., E. 61st St. & Roland Ave., Cleveland, O.
Jewell Steel & Malleable Co., 373 Hertel Ave., Buffalo, N. Y.
Johnson & Co., Isaac G., Spuyten Duyvil, New York, N. Y.
Kennedy Foundry Co., Charles & Wells Sts., Baltimore, Md.

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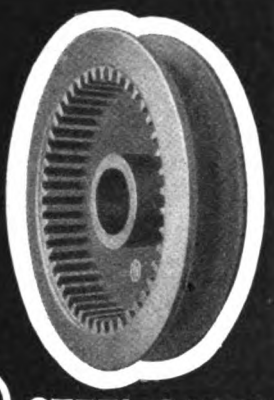

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CASTINGS, Steel (Continued)

Lebanon Steel Foundry, Front & Lehman Sts., Lebanon, Pa.
Lough Bros., 90 West St., New York, N. Y. (Dealers.) (See page 207.)
McCord & Co., 122 S. Michigan Ave., Chicago, Ill.
Malleable Iron Fittings Co., Branford, Conn. (See page 245.)
Massillon Steel Casting Co., Massillon, O.
Maynard Electric Steel Casting Co., 22d Ave. & Kilbourn Rd., Milwaukee, Wis.
Michigan Steel Casting Co., 1986 Gurin St., Detroit, Mich.
Milbury Steel Foundry Co., Milbury, Mass.
Milton Mfg. Co., Milton, Pa.
Milwaukee Steel Foundry Co., 101 S. Water St., Milwaukee, Wis.
Modern Steel Casting Co., Milwaukee, Wis. (See page 221.)
Monarch Steel Castings Co., 129 Solvay Ave., Detriot, Mich.
Monroe Steel Castings Co., Front St., Monroe, Mich.
Mulholland, W. J., Commercial Trust Bldg., Philadelphia, Pa.
National Steel Casting Co., Montpelier, Ind.
National Steel Foundries, ft. of Belleview Pl., Milwaukee, Wis.
New England Steel Co., East Longmeadow, Mass.
New Haven Iron Works, New Haven, Mich.
Ohio Steel Foundry Co., Springfield, O. (See page 221.)
Pelton Steel Co., 672 Kinnickinnic Ave., Milwaukee, Wis.
Philadelphia Roll & Machine Co., Philadelphia, Pa.
Pittsburgh Iron & Steel Foundries Co., Oliver Bldg., Pittsburgh, Pa. "Adamite."
Pyro—See Swedish Crucible Steel Co.
Racine Steel Castings Co., 1524 Kewaunee St., Racine, Wis.
Reading Steel Casting Co., Reading, Pa.
Reed Foundry & Machine Co., Kalamazoo Mich.
Riverside Steel Casting Co., Newark, N. J.
Ryan Foundry Co., D. J., Mill St., Ecorse, Mich.
Sivyer Steel Casting Co., 37th Ave. & Mitchell St., Milwaukee, Wis.
Smith Steel Castings Co., Geo. H., 500 Clinton St., Milwaukee, Wis.
Standard Crucible Steel Castings Co., 719 30th St., Milwaukee, Wis.
Standard Steel Castings Co., Hickox Bldg., Cleveland, O.
Stowell Co., South Milwaukee, Wis.
Strong Steel Foundry Co., Hertel Ave. & Norris St., Buffalo, N. Y.
Suffolk Casting & Supply Co., 156 Pearl St., Boston, Mass.
Swedish Crucible Steel Co., Butler Ave. & G. T. R. R., Detroit, Mich. "Pyro."
Taylor Co., W. P., 318 Ellicott Sq., Buffalo, N. Y.
Taylor-Wharton Iron & Steel Co., High Bridge, N. J. "Tisco."
Teco—See Treadwell Engineering Co.
Tisco—See Taylor-Wharton Iron & Steel Co.
Toledo Steel Casting Co., Monroe & Detroit Sts., Toledo, O.
Treadwell Engineering Co., Edelman & Lennox Sts., Easton, Pa. "Teco."
Twin City Forge & Foundry Co., Stillwater, Minn.
Union Steel Casting Co., Bartlett Sq. (Jamaica Plain), Boston, Mass.
Walsh, James F., 32 N. Clinton St., Chicago, Ill.
Warren Steel Casting Co., 3400 Maury Ave., St. Louis, Mo.
Wehr Steel Co., 45th & Gordon Aves., West Allis, Wis.
Wellman-Seaver Morgan Co., Cleveland, O.
West Michigan Steel Foundry Co., 530 Western Ave., Muskegon, Mich.
West Steel Casting Co., 805-41 E. 70th St., Cleveland, O.
Western Crucible Steel Casting Co., 2832 Grand Ave., S., Minneapolis, Minn.
Wharton, Jr., & Co., Wm., Easton, Pa.
Whitman Co., A. P., Fourth & Booth Sts., Chester, Pa.
Wilco Co., 172 Griswold St., Detroit, Mich. (Distributors.) (See page 221.)

CASTLE NUTS—See Nuts, Castellated

CASTOR OIL—See Oil, Castor

CASTORS, WRECKING—See Trucks, Wrecking

CASTORS and WHEEL TRUCKS

(For turning cars in Garages; see also Turntables, Automobile)

Service Caster & Truck Co., Kansas City, Mo.
Weber Portable Turn-Table Trucks, 6 E. Kiowa St., Colorado Springs, Colo.
Zering Mfg. Co., H., 4437 Appleton Ave., Cincinnati, O.

CATCHES and FASTENERS, Spring Cabinet

(For Heel Boards, Boxes or Cabinets)

Bassick Co., Bridgeport, Conn. (See page 333.)
Brainerd Mfg. Co. (East Rochester), Rochester, N. Y.
Brass Goods Mfg. Co., 345 Eldert St., Brooklyn, N. Y.
Corbin Cabinet Lock Co., New Britain, Conn.
Sargent & Co., Water & Wallace Sts., New Haven, Conn.
Woodruff & Sons Co., Walter W., Mount Carmel, Conn.

CELLULOID CEMENT—See Cement, Celluloid

CELLULOID CLEANERS — See Cleaners, Celluloid

CELLULOID CURTAIN LIGHTS — See Lights, Curtain

CELLULOID, Sheet

(For windows in curtains and storm fronts)

Celluloid Co., 36 Washington Pl., New York, N. Y.
du Pont De Nemours & Co., E. I., Wilmington, Del. "Pyralin." (See page 223.)
Fiberloid Co., 55 Fifth Ave., New York, N. Y.
Flexo-Glass—See Stephens Rubber Co.
Hodes-Zink Mfg. Co., 312 W. State St., Fremont, O.
Pyralin—See du Pont de Nemours Co.
Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo. "Flexo-Glass."
Viscoloid Co., Leominster, Mass.

CEMENT, Airplane Waterproof

(See also Glue, Airplane Liquid)

Ulmer Leather Co., Norwich, Conn.

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CRAFTSMAN FABRIKOID	For covering Craftsman Tops and all solid permanent tops. For the Craftsman Fabrikoid Body Finish. The material is cemented to the entire body.
4500 QUALITY FABRIKOID	For kick pads, door linings and interior trimmings.
9000 QUALITY FABRIKOID	An extra heavy quality for truck seats and backs.

Rubberized Top Fabrics

PONTOP	The finest rubberized fabric for collapsible tops. Made in single and double texture, black and drab backs.
LUXAR	A splendid fabric for general top work. Made in single and double texture, black, drab and white whipcord backs.
DU PONT CURTAIN FABRICS	Made in single texture in two weights, regular and heavy. Backs to match Pontop and Luxar.
BOW DRILL	54 inches wide to match backs of Pontop and Luxar.

E. I. du Pont de Nemours & Co., Inc.,
Sales Department, Fabrikoid Divison
Wilmington, Del.

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Pyralin Sheeting

The standard transparent sheeting for auto windows.
Made in two standard sizes of sheets, 20x36 inches and 20x50 inches.
Standard thicknesses for auto windows are .010—.012½—.015—.020 inches.

E. I. du Pont de Nemours & Company, Inc.
Sales Department, Pyralin Division
Wilmington, Delaware

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Boston, Chicago, Columbus, New York, San Francisco, St. Louis

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CEMENT, Cast Iron

(For repairing cracks in castings; for cement for repairing leaky radiators—See Cement, Radiator)

Alumiflux—See Harner Mfg. Co.

Brand Co., S. H., 559 W. Lake St., Chicago, Ill.

Central Foundry Supply Co., St. Clair Ave. & P. R. R., Columbus, O.

Clark Cast Steel Cement Co., Shelton, Conn. "Steamtite."

Clasby Mfg. Co., 905 N. Main St., Pueblo, Colo. "Singer's."

Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker." (See page 227.)

Harner Mfg. Co., E. C., 143 Pipestone St., Benton Harbor, Mich. "Alumiflux."

New Metal Products Corp., Whipple Bldg., Binghamton, N. Y.

Northwestern Chemical Co., 785 State St., Marietta, O. (See page 277.)

Shelton Metallic Filler Co., Derby, Conn.

Singer's—See Clasby Mfg. Co.

Smooth-On Mfg. Co., 572 Communipaw Ave., Jersey City, N. J.

Steamtite—See Clark Cast Steel Cement Co.

Stevens, Frederic B., Third & Larned Sts., Detroit, Mich.

Wonder Worker—See Hall-Thompson Co.

CEMENT, Celluloid

(For repairing curtain lights)

Auto Products Co., 5739 Elmer St., Pittsburgh, Pa. "Cellu-Fix."

Auto Products Mfg. Co., Buffalo, N. Y. "Nev-R-Stitch." (See page 225.)

Auto Specialties Mfg. Co., Buffalo, N. Y. (See page 1193.)

Cellu-Fix—See Auto Products Co.

Dutch—See Van Cleef Bros.

Monarch Auto Specialties Co., 1211-13 Clybourn Ave., Chicago, Ill.

Nev-R-Stitch—See Auto Products Mfg. Co.

Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."

Xylo Mfg. Co., Uniontown, Pa. "Xylolene," "Xyloust." (See page 227.)

Xylolene—See Xylo Mfg. Co.

Xyloust—See Xylo Mfg. Co.

CEMENT, Gasket

Ad-el-ite—See Adams & Elting Co.

Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite." (See page 267.)

Anchor—See National Rubber & Specialties Co.

Auto Products Mfg. Co., Buffalo, N. Y. "Tite-R-On." (See page 225.)

Auto Specialties Mfg. Co., Buffalo, N. Y. (See page 1193.)

Automotive Supply Mfg. Co., 2005½ Main St., Dallas, Tex. "Cactus."

Be-Be-Co.—See Boston Blacking Co.

Bear Cat Products Co., Capitol Hill Sta., Oklahoma City, Okla.

Benoit, Constant A., Brooklyn, N. Y. "Permatex." (See page 225.)

Boston Blacking Co., Third & Potter Sts., Cambridge, Mass. "Be-Be-Co."

Buffalo Specialty Co., Buffalo, N. Y. (See page 225.)

Bulls-Eye—See Zinsser & Co.

Cactus—See Automotive Supply Co.

Columbus Varnish Co., Columbus, O. "Peerless." (See page 365.)

Dannenhirsch Co., 1905 W. Dauphin St., Philadelphia, Pa. "Danno."

Danno—See Dannenhirsch Co.

Day & Co., James B., 214 W. Ohio St., Chicago, Ill. "Gaskalac."

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."

Dutch—See Van Cleef Bros.

Eberson-Lindsley Paint Co., 1830-32 Morgan St., St. Louis, Mo.

Falls Chemical Works, Cedar Falls, Iowa.

Fossillac—See Red Line, Inc.

Gaskalac—See Day & Co.

Gasketite—See Woodtite Laboratories.

Gasketlac—See Indianapolis Paint & Color Co.

Holdfast—See Buffalo Specialty Co.

Indianapolis Paint & Color Co., 120-24 S. Illinois, St., Indianapolis, Ind. "Gasketlac."

Livingston Co., 161 Day St., New Haven, Conn.

Mengo Products Co., 537 Rosedale St. (Wilkinsburg), Pittsburgh, Pa. "3 in 1."

Mirrolike Mfg. Co., 203 Eighth St., Long Island City, N. Y.

Nation Co., 332 W. 16th St., Los Angeles, Cal. (See page 1141.)

National Rubber & Specialties Co., 4433-39 Chickering Ave., Cincinnati, O. "Anchor."

New Metal Products Corp., Whipple Bldg., Binghamton, N. Y. "Old Roman."

Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 277.)

Norwesco—See Northwestern Chemical Co.

Nu-Back Mfg. Co., 213-15 S. Second St., St. Louis, Mo.

Old Roman—See Neu Metal Products Corp.

Peerless—See Columbus Varnish Co.

Perma-Loc Mfg. Co., Wilkes-Barre, Pa. (See page 695.)

Permatex—See Benoit, Constant A.

Red Line, Inc., Grand Rapids, Mich. "Fassellac." (See page 1047.)

Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.

Rie-Nie—See Durkee-Atwood Co.

3 in 1—See Mengo Products Co.

Tite-R-On—See Auto Products Mfg. Co.

Xylo Mfg. Co., Main St., Uniontown, Pa. "Xylonene," "Xyloust." (See page 227.)

Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."

Woodtite Laboratories, Modesto, Cal. "Gasketite."

Xylonene—See Xylo Mfg. Co.

Xyloust—See Xylo Mfg. Co.

Zinsser & Co., W., 195 William St., New York, N. Y. "Bulls-Eye."

CEMENT, IRON—See Cement, Cast Iron

CEMENT, Linoleum

Day & Co., James B., 214 W. Ohio St., Chicago, Ill. "Enduro."

Enduro—See Day & Co.

Ferdinand & Co., L. W., 152 Kneeland St., Boston, Mass. "20th Century."

20th Century—See Ferdinand & Co.

CEMENT, METAL—See Cement, Cast Iron

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Col-R-Drab—Sport Top Waterproofer and Refinisher.
Cov-R-Blak—Auto Top Lining Dye (concentrated).
Leath-R-Like—Imitation Leather Cushion Renewer.
New-R-Stitch—Rear Curtain-light Cement.
Reb-R-Tite Patch—Quick Repair for Torn Tops.
Quik-R-Fix—Instant mend for Radiator Leaks.
Ev-R-Sta—Airdrying Enamel for Car-Body Hood, etc.
New-R-Chip—Engine and Metal Enamel. Black or Gray.
Col-R-Old—Leather Re-dyer and Re-finisher. Colors.
Rub-R-Life—Revives Tire and Rubber Appearance.
Tite-R-On—Holds Gaskets Firmly; Releases without Damage.
Renu-R-Kote—Airdrying Transparent Varnish.
New-R-Stik—Prevents Rim-rust and Tire-adhesion.
Kleen-R-Plug—Removes Carbon.
Cov-R-Mar—Retouching Enamel.

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Waterproof top and cushion dressing

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Keeps clutches from slipping

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A gasket material in heavy paste form

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A very rapid and solid filler

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Complete outfits for refinishing cars

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Removes tar but not the finish

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Removes carbon from cylinders

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For squeaky springs and similar parts

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CEMENT, Radiator Repair

(For repairing or sealing leaks in radiators)

Ajaco—See Alsdorf Corp.

Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite." (See page 267.)

Ad-el-ite—See Adams & Elting Co.

Alsdorf Corp., A. J., 404 S. Wells St., Chicago, Ill. "Ajaco."

Alwas-Hold Auto Products Co., 6929 Stony Island Ave., Chicago, Ill.

American—See Crum Mfg. Co.

An-Ti-Le-Ko—See Ball Products Co.

Atlas Auto Supply Co., 697 W. Austin Ave., Chicago, Ill. (See page 273.)

Auto Products Mfg. Co., Buffalo, N. Y. "Quick-R-Fix." (See page 225.)

Auto Remedy Co., Evans St., Cincinnati, O. "Magic."

Auto Specialties Mfg. Co., Buffalo, N. Y. "Beats-All." (See page 1193.)

B. A. T. Co., Germantown & Stenton Aves., Philadelphia, Pa. "Panther."

Ball Products Co., 226 Fifth St., Detroit, Mich. "An-Ti-Le-Ko."

Bear Cat Products Co., Capitol Hill Sta., Oklahoma City, Okla.

Beats-All—See Auto Specialties Mfg. Co.

Benoit, Constant A., Brooklyn, N. Y. "Permatex." (See page 225.)

Black Panther Corp., 2406 S. Robinson St., Oklahoma City, Okla.

Blue Ribbon—See International Metal Polish Co.

Boggs Co., Kirk A., Fort Dodge, Iowa. "Mecco."

Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.

Buffalo Specialty Co., Buffalo, N. Y. "Neverleak." (See page 225.)

Camden Chemical Mfg. Co., 18th & Mickle Sts., Camden, N. J. "Greyhound."

Check—See O-K Auto Supply.

Crum Mfg. Co., 120 N. Main St., Ottawa, Kans "Radi-No-Leak," "American."

Cumings Bros., 901-03 S. Saginaw St., Flint. Mich. "Stoppit."

Cure-A-Leak—See Dannenhirsch Co.

Dannenhirsch Co., 1905 W. Dauphin St., Philadelphia, Pa. "Cure-A-Leak."

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."

E-Fec-Tiv—See Permatite Mfg. Co.

Evans Mfg. Co., 620-22 E. 63rd St., Chicago, Ill.

Gee-Bee—See Green Bay Supply Co.

Green Bay Supply Co., 518 Maine St., Green Bay, Wis. "Gee-Bee."

Greyhound—See Camden Chemical Mfg. Co.

Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder-Worker." (See page 227.)

Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whiz."

International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."

Johnson & Son., S. C., 1012 16th St., Racine, Wis.

Karbonoid Chemical Co., 318 East Ave., Elyria, O. "No-Le-Ko."

Leak Cure Metal Cement Co., 110 Fulton St., New York, N. Y.

Lins Mfg. Co., W. R. (Roxborough), Philadelphia, Pa. "Linsco."

Linsco—See Lins Mfg. Co.

Magic—See Auto Remedy Co.

Mecco—See Boggs Co.

Mengo Products Co., 537 Rosedale St. (Wilkinsburg), Pittsburgh, Pa.

Mirrolike Mfg. Co., 203 Eighth St., Long Island City, N. Y.

Moco—See Tungsten Mfg. Co.

Monarch Auto Specialties Co., 1211-13 Clybourn Ave., Chicago, Ill.

Mormiles Co., 416 Sherman St., Chicago, Ill.

Nation Co., 332 W. 16th St., Los Angeles, Cal. (See page 1141.)

National Chemical Co., Canal Fulton, O. "Quick-Seal."

Neverleak—See Buffalo Specialty Co.

No-Le-Ko—See Karbonoid Chemical Co.

Northwestern Chemical Co., 785 State St., Marietta, O. "Se-Ment-Ol." (See page 277.)

O-K Auto Supply, 512 S. First St., Blackwell, Okla. "Check."

Panther—See B. A. T. Co.

Peerless Auto Specialty Corp., 188 St. Paul St., Rochester, N. Y.

Perma-Loc Mfg. Co., Wilkes-Barre, Pa. (See page 695.)

Permatex—See Benoit, Constant A.

Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."

Puritan Soap Co., 500 Exchange St., Rochester, N. Y.

Quick-Seal—See National Chemical Co.

Quik-R-Fix—See Auto Products Mfg. Co.

Radi-No-Leak—See Crum Mfg. Co.

Red Line, Inc., Grand Rapids, Mich. (See page 1047.)

Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.

Rie-Nie—See Durkee-Atwood Co.

Ryden Supply Co., 202 E. Lake St., Minneapolis, Minn. "Shurmend."

Se-Ment-Ol—See Northwestern Chemical Co.

Smooth-On Mfg. Co., 572 Communipaw Ave., Jersey City, N. J.

Sterno Corp., New York, N. Y. (See page 1147.)

Stix-Tite—See Guaranty Tire & Vulcanizing Co.

Stone Solder Co., 3107 Detroit Ave., Cleveland, O.

Stoppit—See Cumings Bros.

Shurmend—See Ryden Supply Co.

Sureseal Mfg. Co., 9 Centre St., Auburn, Me.

Tungsten Mfg. Co., Marshalltown, Ia. "Moco." (See page 1111.)

Universal Solder Co., Fort & Beaubien Sts., Detroit, Mich.

Whiz—See Hollingshead Co.

Wonder Worker—See Hall-Thompson Co.

"X" Laboratories, 25 W. 45th St., New York, N. Y. (See page 227.)

Xylo Mfg. Co., Main St., Uniontown, Pa. (See page 227.)

Z & A Mfg. Co., Hazelton, N. Dak.

CEMENT, RUBBER—See Cement, Tire Repair

CEMENT, Tire Repair

(Rubber Cement for repairing or patching Shoes and Tubes; for cement for filling cuts in shoes—See Compounds, Tire Repair)

Acme Supply Co., 112 Dexter St., Ionia, Mich.

Ajax Rubber Co., 220 W. 57th St., New York, N. Y. (See page 1009.)

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Xylonene.

Xylonene is a transparent cement, made for patching celluloid in curtain and rear windows.

With Xylonene anyone can repair a hole or crack in the curtain or rear windows of their cars.

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CEMENT, Tire Repair (Continued)

American Rubber & Tire Co., 100 Beech St., Akron, O. "Stickfast."

Arnstein, Eugene, 45 W. 26th St., Chicago, Ill.

Atlas Auto Supply Co., 697 W. Austin Ave., Chicago, Ill. "Tire-Doh." (See page 273.)

Bear Cat Products Co., Capitol Hill Sta., Oklahoma City, Okla.

Biehl, G. M., 204 S. Centre St., Pottsville, Pa.

Blue Ribbon—See International Metal Polish Co.

Bowes Co., Robert M., 124-26 E. Ohio St., Indianapolis, Ind. "Seal-Fast."

Bull Dog—See Page-Lester Co.

Bull Grip, 57-61 Eugenia St., Atlanta, Ga.

C. O. T.—See Tingley & Co.

Continental Rubber Works, 1902 Liberty St., Erie, Pa. "Vitalic."

Cox, David H., 812 Chestnut St., Roselle, N. J.

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."

Dutch—See Van Cleef Bros.

Eclipse Cement & Blacking Co., 1233 Belmont Ave., Philadelphia, Pa. "Tiger."

Eno Rubber Co., 1026 S. Los Angeles St., Los Angeles, Cal. "J. E."

Essex Rubber Co., May & Bleakes Sts., Trenton, N. J.

Ever Right—See Fry, Keyser.

Firestone Tire & Rubber Co., Miller & Sweitzer Aves., Akron, O.

Fry, Keyser, 616-22 N. Eighth St., Reading, Pa. "Ever Right."

General Tire & Rubber Co., E. Market St., Akron, O.

Goodrich Co., B. F., S. Main St., Akron, O. "Titan."

Goodbar Rubber Co., 40 Wilder St., Minneapolis, Minn.

Goodyear Tire & Rubber Co., Akron, O. (See page 1015.)

Guaranty Tire & Vulcanizing Co., Fort Dodge, Ia. "Stix-Tite."

Hadley Bros.-Uhl Co., 3948-52 W. Pine Blvd., St. Louis, Mo. "Okeh."

Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker." (See page 227.)

Harlgens Co., Erie, Pa.

Henry's—See Perfectfix Rubber Co.

Industrial Rubber Goods Co., Broad St., St. Joseph, Mich. (See page 481.)

International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."

Iowa Cord Tire Co., Fleming Bldg., Des Moines, Iowa.

J. E.—See Eno Rubber Co.

Keystone Rubber Mfg. Co., 135 E. 11th St., Erie, Pa.

Locktite Patch Co., 7850 Morrow St., Detroit, Mich.

Lok-Seal—See Stephens Rubber Co.

Manhattan Rubber Mfg. Co., Willett St., Passaic, N. J.

Mengo Products Co., 537 Rosedale St. (Wilkinsburg), Pittsburgh, Pa.

Michelin Tire Co., Milltown, N. J.

Miller, Chas. E., 1400 S. Meridian St., Anderson, Ind.

Miller Rubber Co., Akron, O. (See page 979.)

Money-Back Laboratories, 5 N. Dewey St., Oklahoma City, Okla.

Motor Parts Co., Ambridge, Pa.

National Chemical Co., Canal Fulton, O. "Quick Seal."

National Rubber & Specialties Co., 4422-39 Chickering Ave., Cincinnati, O. "Red Cross."

Okeh—See Hadley Bros.-Uhl Co.

P. P. & B.—See St. Louis Rubber Cement Co.

Page-Lester Co., 2644 Indiana Ave., Chicago, Ill. "Bull Dog."

Parks & Co., F. B., 25 Prescott St., Grand Rapids, Mich.

Perfectfix Rubber Co., Greenbay Rd., Milwaukee, Wis. "Henry's."

Perma-Loc Mfg. Co., Wilkes-Barre, Pa. (See page 695.)

Polson Rubber Co., Doan Ave. & Nickel Plate R. R., Cleveland, O. "Rubbertite."

Quaker City Rubber Co., 639 Market St., Philadelphia, Pa.

Red Cross—See National Rubber & Specialties Co.

Red Seal Rubber & Cement Co., Passaic, N. J. (See page 1123.)

Red X—See St. Louis Rubber Cement Co.

Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.

Rie-Nie—See Durkee-Atwood Co.

Rubbertite—See Polson Rubber Co.

S-V—See Williams Mfg. Co.

St. Louis Rubber Cement Co., 3046 Lambdin Ave., St. Louis, Mo. "P. P. & B." "Red X."

Seal-Fast—See Bowes Co.

Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo. "Lok-Seal."

Stickfast—See American Rubber & Tire Co.

Stoppit—See Cumings Bros.

Superfix Rubber Co., Elyria, O. (See page 531.)

Swanson Supply Co., 2124 Westlake Ave., Seattle, Wash.

Tiger—See Eclipse Cement & Blacking Co.

Tingley & Co., Chas. O., Ross St. & St. Geo. Ave., Rahway, N. J. "C. O. T."

Tire-Doh—See Atlas Auto Supply Co.

Titan—See Goodrich Co.

United States Tire Co., 1790 Broadway, New York, N. Y.

Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."

Vitalic—See Continental Rubber Works.

Voorhees Rubber Mfg. Co., 20-56 Bostwick Ave., Jersey City, N. J.

Williams Mfg. Co., 1800 Carman St., Camden, N. J. "S-V."

Wonder Worker—See Hall-Thompson Co.

CEMENT, Top Repair

Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.

Xylo Mfg. Co., Uniontown, Pa. (See page 227.)

CEMENT, VULCANIZING—See Cement, Tire Repair

CENTER GAGES—See Gages, Center

CENTER PUNCHES—See Punches, Center Prick and Drift

CENTERING DRILLS—See Drills, Centering

CENTRIFULGAL CLARIFIERS—See Clarifiers

CENTRIFUGAL OIL PURIFIERS—See Purifiers, Oil

CENTRIFUGALS, CLARIFYING AND FILTERING—See Separators, Oil

CHAIN APPLIERS—See Tools, Tire Chain Attaching

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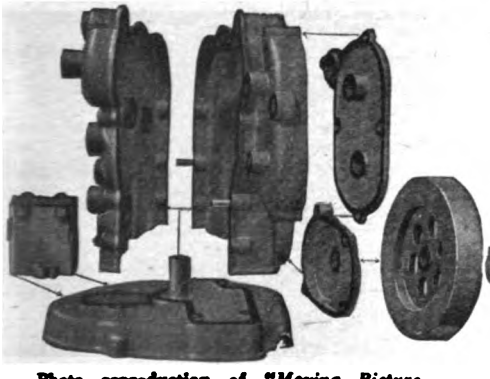

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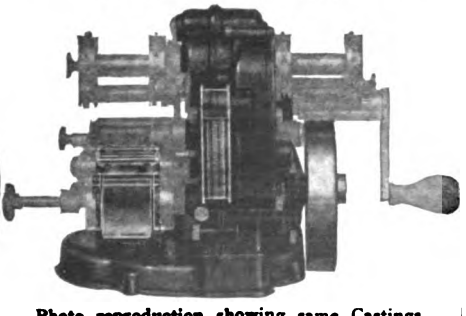

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CHAIN BLOCKS—See Blocks or Hoists, Chain

CHAIN, DRIVING—See Chain, Transmission

CHAIN, DRIVING FOR MOTORCYCLES—See Chain, Motorcycle Driving

CHAIN FASTENERS—See Fasteners, Tire Chain

CHAIN GUARDS—See Guards, Motorcycle Chain

CHAIN HOISTS—See Blocks or Hoists, Chain

CHAIN LOCKS—See Locks, Tire Chain

CHAIN LUBRICANT—See Graphite; also Greases.

CHAIN, Motorcycle Driving

Baldwin Chain & Mfg. Co., Worcester, Mass. (See page 235.)

Brandenburg Bros. & Eccleston, 1112 S. Michigan Ave., Chicago, Ill. (Sole Distributors for Duckworth Chain & Mfg. Co., Springfield, Mass.)

Duckworth Chain & Mfg. Co.-See Brandenburg Bros. & Eccleston.

Frasse & Co., Peter A., 417-21 Canal St., New York, N. Y. (Importers.) "Hans Renold." (See page 279.)

Hans Renold—See Frasse & Co.

Presto—See Whitney Mfg. Co.

Whitney Mfg. Co., Hartford, Conn. "Presto." (See page 231.)

CHAIN REPAIR LINKS—See Links, Tire Chain Repair

CHAIN REPAIR TOOLS—See Tools, Chain Repair; also Tools, Tire Chain Repair; also Tools, Motorcycle Chain Repair

CHAIN SILENT—See Chain, Transmission

CHAIN SPRINGS — See Tighteners, Tire Chain

CHAIN TIGHTENERS — See Tighteners, Tire Chain

CHAIN TOOLS—See Tools, Chain Repair; also Tools, Tire Chain Attaching; also Tools, Tire Chain Repair; also Tools, Motorcycle Chain Repair

CHAIN, Transmission or Driving

(Including Block, Roller and Silent Chain)

Abell-Howe Co., 332 S. Michigan Ave., Chicago, Ill. (Sole Distributors for American High Speed Chain Co., Indianapolis, Ind.)

American High Speed Chain Co.—See Abell-Howe Co.

Baldwin Chain & Mfg. Co., Worcester, Mass. (See page 235.)

Brampton—See Miller, Chas. E.

Coventry—See Funke Co.

Culver-Taylor Chain Works, 514 Madison Ave., Detroit, Mich.

Diamond Chain & Mfg. Co., Kentucky Ave., W., Indianapolis, Ind.

Frasse & Co., Peter A., 4171-21 Canal St., New York, N. Y. (Importers.) "Renold." (See page 279.)

Funke Co., Herbert F. L., 118 Broad St., New York, N. Y. "Coventry." (See page 163.)

Link-Belt Co., Indianapolis, Ind. (See page 235.)

Miller Chas. E., 231 W. 54th St., New York, N. Y. (Importer.) "Brampton."

Morse Chain Co., Ithaca, N. Y. (See page 233.)

Renold—See Frasse & Co.

Townsend Co., W. E., 137 W. 56th St., New York, N. Y. (Distributors.) (See page 683.)

Whitney Mfg. Co., Hartford, Conn. (See page 231.)

CHAINS or GRIPS, Non-Skid

(For other Anti-Skid Devices—See Bands, Non-Skid, also Boots, Sand; also Treads Detachable)

A. B. C.—See American Business Corp.

American Business Corp., 1780 Broadway, New York, N. Y. "A. B. C." (See page 753.)

American Chain Co., Bridgeport, Conn. "Rido-Skid," "Weed." (See page 535.)

American Non-Skid Attachment Co., 4864 Woodward Ave., Detroit, Mich. "Clegson."

American Traction Ring Co., 108-10 W. 53rd St., New York, N. Y.

Anti-Skid Auto Shoe Co., Moline, Ill.

Arrow-Grip Mfg. Co., Glens Falls, N. Y.

Auto Tire Boot Co., 1210 Webster Ave., Chicago, Ill.

Automotive Equipment Co., Parson & Walbridge Sts., Kalamazoo, Mich. "Master Grip."

Bantlin Co., Julius J., Cincinnati, O. (See page 505.)

Bear Mfg. Co., E. 17th St. & First Ave., Rock Island, Ill. "Q-D."

Berated Mfg. Co., 765 Mather St., Chicago, Ill. (See page 505.)

Channon Mfg. Co., James H., 222-32 W. Erie St., Chicago, Ill. "Union." (See page 127.)

Clegson—See American Non-Skid Attachment Co.

Cleveland Chain & Mfg. Co., Cleveland, O. "Trax-Yun."

Daubenspeck Chain Co., Brady & Monroe Sts., Butler, Pa. "Dubl-Bilt," "Minute Grabs."

Dow & Cole, 1173 Elm St., Manchester, N. H. "Spider."

Dubl-Bilt—See Daubenspeck Chain Co.

Easyon—See Woodworth Mfg. Co.

Easyroll—See Will-Burt Co.

Emergency—See Gemco Mfg. Co.

Foley Traction Rim Co., 327 Hennepin Ave., Minneapolis, Minn.

Fulton Co., 75th & National Aves., Milwaukee, Wis. (See pages 1031 to 1036.)

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. "Emergency." (See pages 174 and 175.)

Giant Grip Mfg. Co., Dept. 15, Oshkosh, Wis. (See page 701.)

Goodhue, John, Laconia, N. H.

Grus Leaf Spring Oiler Co., 4504 W. Harrison St., Chicago, Ill.

Highway—See Owen & Graham Co.

Holmes—See Saltsman Co.

Imperial Bit & Snap Co., Racine, Wis. "Reichert." (See page 883.)

K-L—See Kingsbury-Leahy Co.

Kalamazoo Chain Co., Kalamazoo, Mich. "No-Stuck."

Kant-Skid—See Woodworth Mfg. Co.

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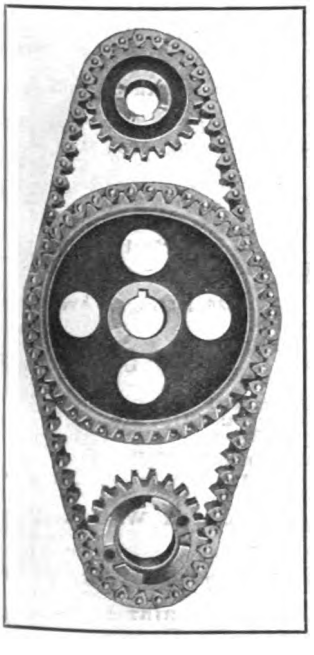
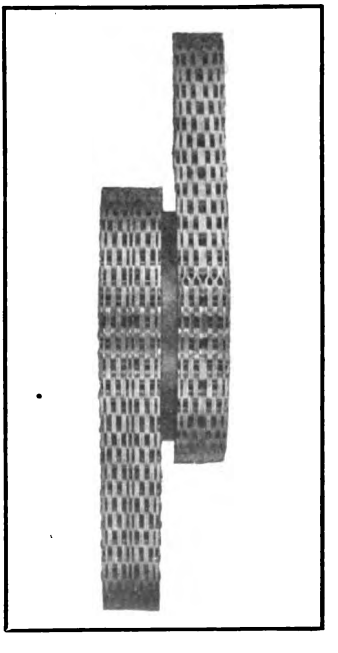
HIGH EFFICIENCY

FRONT END MOTOR CHAIN DRIVES AND STILL IN GOOD CONDITION



Not one of these chains has been known to skip a sprocket tooth.

Interchangeable on the sprockets furnished with the car.



THE WHITNEY MFG. CO.

HARTFORD, CONN., U. S. A.

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CHAINS or GRIPS, Non-Skid (continued)

Kimball Tire Case Co., 163 Broadway, Council Bluffs, Ia.

Kingsbury-Leahy Co., 135 Hudson Ave., Albany, N. Y. "K-L."

Leader Skid Chain Co., 4104 Manchester Ave., St. Louis, Mo.

Loktite—See Staples & Seefeld.

Lutz Co., Morris, Bambrey & Moore Sts., Philadelphia, Pa. (See page 651.)

McKinnon Chain Co., 250 Amherst St., Buffalo, N. Y.

Master-Grip—See Automotive Equipment Co.

Metal Stamping Co., 13th St. & East ave., Long Island City, N. Y.

Minute Grabs—See Daubenspeck Chain Co.

Mosco—See Motor Specialties Co.

Motor Specialties Co., Waltham, Mass. "Mosco."

Mundorf, Wm. C., 1401 First Ave., York, Pa.

Naceskid Service Chain Co., Third & Schenck Sts., Trenton, N. J.

Never-Skid Mfg. Co., 150 Nassau St., New York, N. Y.

Newhall Chain Forge & Iron Co., 90 West St., New York, N. Y.

No-Stuck—See Kalamazoo Chain Co.

Non Skid Co. of America, 9 Norwich St., Worcester, Mass.

Owen & Graham Co., 2843 E. Grand Blvd., Detroit, Mich. "Highway."

Parker-Morse Co., 315 W. 15th St., Cincinnati, O.

Peoria Mfg. Co., Lehman Bldg., Peoria, Ill.

Pressed Steel Grip Co., Sixth St. & Grand Blvd., Pittsburgh, Pa.

Prest-O-Grip—See Rowe Calk & Chain Co.

Q-D—See Bear Mfg. Co.

Reichert—See Imperial Bit & Snap Co.

Reliable Unit Clamp Chain Co., 625 Wabasha St., St. Paul, Minn.

Rido-Skid—See American Chain Co.

Rixie Mfg. Co., 889 S. Pierce St., Milwaukee, Wis.

Rowe Calk & Chain Co., Plantsville, Conn. "Prest-O-Grip."

Sala Co., Canton, O.

Saltsman Co., DeWitt G., 265-267 Park St., New Haven, Conn. "Holmes." (See page 1115.)

Spider—See Dow & Cole.

Standley Skid Chain Co., Boone, Ia. (See page 679.)

Staples & Seefeld, M. & M. Bank Bldg., Milwaukee, Wis. "Loktite."

Stice—See Tama Non-Skid Co.

Stubbs & Co., C. C., 304 Fowler St., Waterloo, Iowa.

Tama Non-Skid Co., Tama, Ia. "Stice."

Trax-Yun—See Cleveland Chain & Mfg. Co.

Union—See Channon Mfg. Co.

Union Chain Co.—See United Sales Co.

United Sales Co., 510 Temple Ct., Minneapolis, Minn. (Sole Distributors for Union Chain Co., Minneapolis, Minn.

United States Chain & Forging Co., Thompson Ave., Pittsburgh, Pa.

Uptou Co., Curwensville, Pa.

Weed—See American Chain Co.

Will-Burt Co., Orrville, O. "Easyroll."

Woodworth Mfg. Co., 1-29 Starr Ave., Binghamton, N. Y. "Easyon," "Kant-Skid."

CHAINS, TIRE—See Chains, Non-Skid

CHAINS, TOW—See Ropes or Chains, To

CHAIRS, FOLDING—See Seats, Supple mentary

CHAMFERING MACHINES—See Machine Gear Tooth Chamfering

CHAMOIS—See Sponges and Chamois

CHANGERS, TIRE—See Machines, Ti Removing and Replacing

CHANNEL STEEL—See Steel, Angle

CHANNELS, PRESSED STEEL — Se Frames, Pressed Steel

CHARGERS, BATTERY — See Magneto and Dynamos; also Generators, Batter Charging; also Rectifiers, Alternatin Current; also Rheostats, Charging; als Systems, Electric Lighting

CHARGERS, Magneto Magnet

(For remagnetizing magneto magnets)

Auto Electrical Maintenance Co., 943 Chestnu Ave., Cleveland, O. "La Fer."

Cowie Electric Co., E. S., 1816 McGee St Kansas City, Mo.

Durham Co., P. J., 244 W. 49th St., Nev York, N. Y. (See page 531.)

Ecco—See Electric Equipment Co.

Electric Equipment Co., 1240 S. Hope St Los Angeles, Cal. "Ecco."

Esterline Co., 227 E. South St., Indianapoli Ind.

F. F.—See France Mfg. Co.

Fore Electrical Mfg. Co., 5255 N. Market St St. Louis, Mo.

France Mfg. Co., 10325 Berea Rd., Cleveland O. "F. F."

Gund Mfg. Co., La Crosse, Wis.

La Fer—See Auto Electrical Maintenance Co

Mohawk Electric Mfg. Co., 15 Kirk Pl Newark, N. J.

Morgan, C. W., 1336 Michigan Ave., Chicag Ill.

Peco—See Phillips & Co.

Phillips & Co., H. E., Union City, Ind "Peco."

Quality Electrical Products Co., 907 E 15th St., Kansas City, Mo. (See page 1219.)

R. & N.—See Randall & Noll.

Randall & Noll, 317 S. 11th St., Lincoln, Neb "R. & N."

Stahl Rectifier Co., 1401 W. Jackson Blvd. Chicago, Ill.

Teco—See Titan Engineering Co.

Titan Engineering Co., 603 W. Pearl St., Unio City, Ind. "Teco."

Valley Electric Co., 3157 S. Kingshighway, St. Louis, Mo. (See page 385.)

Vim Unit Remagnitizer, 6 Smith St., Paterson, N. J.

CHARGERS, Magneto Magnet, fo Fords

(For remagnetizing magneto magnets)

Auto Electrical Maintenance Co., 943 Chestnut Ave., Cleveland, O. "La Fer."

Benjamin Electric Mfg. Co., Chicago, Ill. (See pages 181 and 517.)

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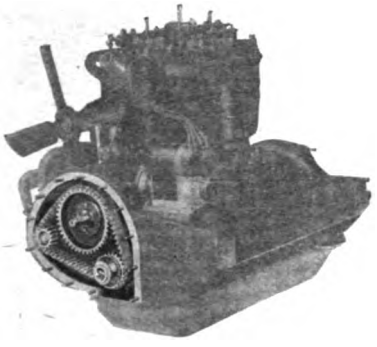
The Sign of Efficiency

The Sign of Durability

MORSE DRIVES



Positive as Gears

Flexible as a Belt

Longer Life

It is not hard to understand why the MORSE Silent Front End Chain Drive has become known all over the world as the superior long life, accurate chain.

The reason is simple: the ability of this chain to remain at its best for long periods without the need of expert attention.

The users of Front End Accessory Drives have learned that this unusual quality means faithful, efficient service from the Car or Truck.

They also find MORSE Silent Chains a source of great and lasting economy.

Write us your Front End problems
There is a MORSE CHAIN DRIVE Remedy

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Berkshire Magneto Co., 70 West St., Pittsfield, Mass.

Foehl, G. A., Paterson, N. J. "Vim."

Fore Electrical Mfg. Co., 5255 N. Market St., St. Louis, Mo.

La Fer—See Auto Electrical Maintenance Co.

Lectro Mfg. & Sales Co., 1348 N. Clark St., Chicago, Ill.

Midway Mechanical Co., St. Paul, Minn. (See page 667.)

Mohawk Electric Mfg. Co., 15 Kirk Pl., Newark, N. J.

Niehoff & Co., Paul G., 232-42 E. Ohio St., Chicago, Ill. (See page 677.)

CHARGERS, STORAGE BATTERY FOR FORDS—See Rectifiers, Alternating Current

CHARGING APPARATUS — See Generators; also Ammeters; also Panels; also Plugs; also Rectifiers; also Rheostats

CHARGING CONNECTORS, STORAGE BATTERY — See Connectors, Storage Battery Charging

CHART HOLDERS, AIRCRAFT — See Holders, Aircraft Chart

CHARTS, Electric Wiring

Ambu—See American Bureau of Engineering.

American Bureau of Engineering, Michigan Ave. & 16th St., Chicago, Ill. "Ambu." (See page 485.)

Automotive Publishing Co., 442 S. Dearborn St., Chicago, Ill. (See page 155.)

Michigan State Auto School, 3729 W. Woodward Ave., Detroit, Mich. (See page 399.)

CHASSIS ADAPTERS — See Converters, Chassis

CHASSIS CONVERTERS—See Converters, Chassis

CHASSIS LUBRICATING SYSTEMS—See Systems, Chassis Lubricating

CHAUFFEUR'S TELEPHONES—See Telephones, Limousine

CHECK VALVES—See Valves, Angle; also Valves, Ball Check; also Valves, Engine

CHECKS, Brass, Time, Tool and Pay

Matthews & Co., Jas. H., 1537 Forbes Field, Pittsburgh, Pa. (See page 905.)

Mulhaupt, F. Jos., 227 N. Fifth St., Lafayette, Ind.

Murdock Co., James W., 116 Opera Pl., Cincinnati, O.

Noble & Westbrook Mfg. Co., 9 Asylum St., Hartford, Conn.

Pannier Bros. Stamp Co., 207-09 Sandusky St., Pittsburgh, Pa. (See page 905.)

Superior Seal & Stamp Co., 217 Jefferson Ave., Detroit, Mich. (See page 905.)

Wright & Son, Greg. G., 119-21 Opera Pl., Cincinnati, O.

CHECKS, Clutch

Schooler Co., O. E., Webb City, Mo

CHECKS, PAY—See Checks, Brass Tim

CHECKS, Steering Gear

(Spring or friction attachments for steering gear eliminate sideway and reduce the shock transmit to the steering wheel by the road wheels)

Balcrank—See Cincinnati Ball Crank Co.

Cincinnati Ball Crank Co., 90 North S Cincinnati, O. "Balcrank." (See page 333.)

Cooper Auto Supply Co., N. Broad S Thomasville, Ga.

Esner Mfg. Co., 206 Green St., Peoria, "Soo-Saf-Gide."

F. M. F.—See International Sav-A-Life Fe der Co.

Houseman, Wm. H., Chatham, N. Y. "Lit Steersman."

International Sav-A-Life Fender Co., Guardi Bldg., Cleveland, O. "F. M. F."

Little Steersman—See Houseman, Wm. H.

Soo-Saf-Gide—See Esner Mfg. Co.

CHECKS, Steering Gear, for Ford

(Spring or friction attachments for steering gear eliminate sideway and reduce the shock transmit to the steering wheel by the road wheels)

Accesso Mfg. Co., 99 State St., Boste Mass. (Sole Distributors for D. & O. C Boston, Mass. (See page 235.)

A. S. B.—See Burnell Engineering Co.

American Automobile Accessories Co., 17 Blue Rock St., Cincinnati, O. "Litl Sho Fu

Anderson—See Motor Device Co.

Badger—See Safety Appliance Co.

Bailey Co., W. J., Newark, N. J.

Bayne Mfg. Co., Bushnell, Ill. "Pilot." (See page 725.)

Burnell Engineering Co., 536 E. Water S Milwaukee, Wis. "A. S. B."

Casco Mfg. Co., Thomasville, Ga. (Sole D tributors for Cooper Auto Supply Co., Tho asville, Ga.)

Comfort Motor Machine Co., 715 Galapago S Denver, Colo.

Cooper Auto Supply Co.—See Casco Mfg. C

Cox Brass Mfg. Co., Albany, N. Y. (See page 261.)

D. & O. Co.—See Green Sales Corp.

Danvers Specialty Co., Danvers, Ill.

Drive-Rite—See Economy Gas Lamp Co.

Driveaser—See Frazier & Co.

Economy Gas Lamp Co., 215-17 Goodrich Kansas City, Mo. "Drive-Rite."

Frazier & Co., W. S., Aurora, Ill. "Drivea

Handee—See Racine Handy Mfg. Co.

Hanten Machine Co., Watertown, S. Dak.

Harrington Co., O. C., 4138 Fillmore St., cago, Ill.

Hastings Mfg. Co., 36 Mill St., Hasti Mich. (See page 567.)

Houseman, Wm. H., Chatham, N. Y. "L Steersman."

Ideal Mfg. Co., 14th & Harrison Sts., N Kansas City, Mo.

Ideal Mfg. Co., 1525 Main St., Anderson, I

Jubilee Mfg. Co., 1929 S. 20th St., Omaha,

K-L-K—See Kickhaefer Mfg. Co.

Kantlock—See Servis Specialty Mfg. Co.

Kickhaefer Mfg. Co., Dept. A., 189 Oregon St., Milwaukee, Wis. "K-L (See page 901.)

L-A—See Lockwood-Ash Motor Co.

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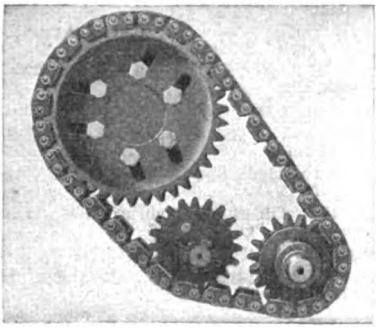

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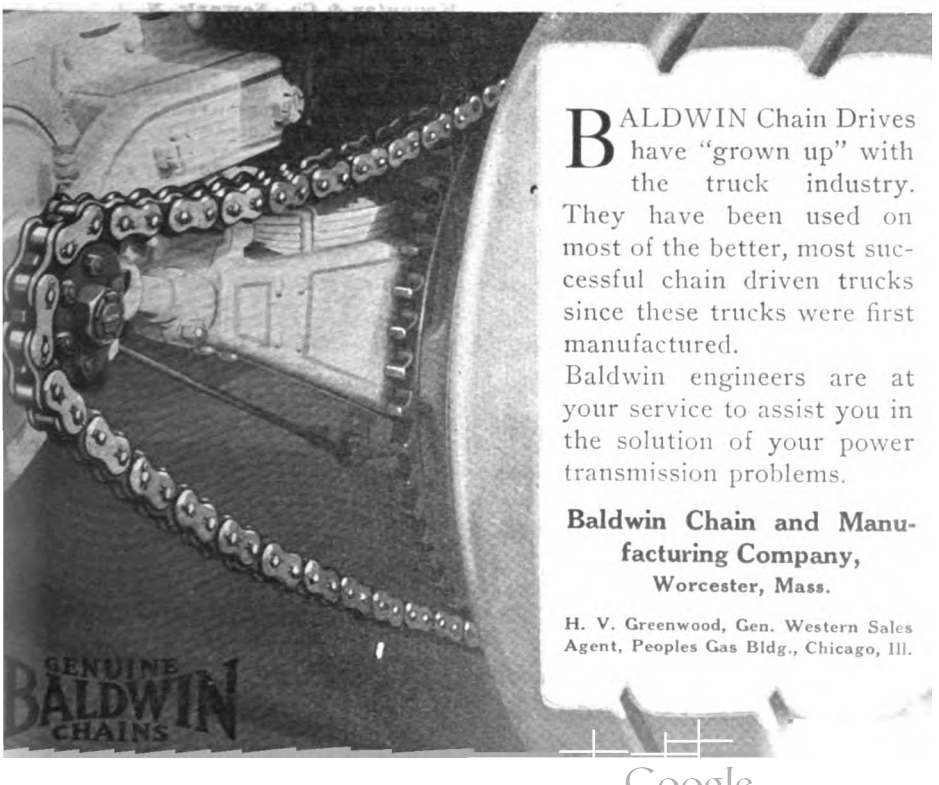

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Lanshield Mfg. Co., 510 First Ave., West Haven, Conn. "Steady Steersman."

Liti Sho Fur—See American Automobile Accessories Co.

Little Steersman—See Houseman, Wm. H.

Lockwood-Ash Motor Co., 2052 Douglas St., Jackson, Mich. "L.-A."

Marvel Auto Specialties Corp., 149-51 Oak St., Buffalo, N. Y.

Meixell Co., Ohio & Meridian Sts., Indianapolis, Ind. "Overland."

Miller & Co., Spring Valley, Ill.

Modern Auto Appliance Co., Chatham, N. Y. "Little Steersman."

Motor Device Co., Anderson, Ind. "Anderson."

Overland—See Meixell Co.

Philadelphia Auto Safety Steering Device Co., 1623 Arch St., Philadelphia, Pa.

Pilot—See Bayne Mfg. Co.

Protecto—See Robinson Motor Truck Co.

Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."

Robinson Motor Truck Co., 141 N. Ninth St., Minneapolis, Minn. "Protecto."

Round Robbin—See V Air Valve & Mfg. Co.

Rounds & Co., C. C., Dows, Ia.

Safety Appliance Co., 515-17 Broadway, Baraboo, Wis. "Badger."

Savidge Co., A. C., 75 N. New Jersey St., Indianapolis, Ind.

Saxton Auto-Accessory Co., 25 W. 33rd St., New York, N. Y.

Servis Specialty Mfg. Co., 627 Clara Ave., St. Louis, Mo. "Kantlock."

Sieverkrapp Engine Co., De Koven & N. W. Tracks, Racine, Wis. "Steer-Adius."

Simplicity Mfg. Co., 1981 E. 97th St., Cleveland, O.

Steady Steersman—See Lanshield Mfg. Co.

Stear-Safe—See Universal Products Co.

Steer-Adius—See Sieverkrapp Engine Co.

Steer Relief—See Strong Metal Products Co.

Steer-Exer—See Walker Mfg. Co.

Steerautomat Co., Rockford, Ill.

Strong Metal Products Co., 1011-51 Power Ave., N. E., Cleveland, O. "Steer Relief."

Twin-Rim Co., Everett, Mass.

Universal Products Co., 908 W. Chicago Ave., cago, Ill. "Stear-Safe."

V Air Valve & Mfg. Co., 1648 Tremont St., Denver, Colo. "Round Robbin."

Walker Mfg. Co., Hamilton & Michigan Sts., Racine, Wis. "Steer-Exer."

CHECKS, TIME—See Checks, Brass Time

CHECKS, TOOL—See Checks, Brass Time

CHEMICAL FIRE TANKS—See Tanks, Chemical Fire

CHEMICAL PLATING COMPOUNDS—See Compounds, Chemical Plating

CHEMICALS, RUST PREVENTING—See Compounds, Rust Preventing and Removing

CHIMES, EXHAUST—See Horns, Exhaust

CHISELS, CAPE—See Chisels, Cold and Cape

CHISELS, Cold and Cape

Atha Tool Co., Chapel St., Newark, N. J.

Beall Bros., Fourth St., Alton, Ill.

Bicknell Mfg. & Supply Co., 22 N. Academy St., Janesville, Wis.

Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn.

Braunsdorf-Mueller Co., 305 Madison St., Elizabeth, N. J.

Buck Bros., Milbury, Mass.

Buffum Tool Co., Louisiana, Mo. (See page 529.)

Carver Tool Works, Spring Valley, N. Y.

Cincinnati Tool Co., Main Ave., Norwood, O. "Hargrave."

Cushman Co., Champaign, Ill. (See page 635.)

Diebel, A. J., 976 Woodward Ave., Detroit, Mich. (Michigan, Indiana and Ohio Distributors for Cushman Chisels.) (See page 543.)

Drew & Co., C., Kingston, Mass.

Fairmount Tool & Forging Co., 10611 Quincy Ave., Cleveland, O.

Gogle Hand-Forged Tool Co., 1941 Polk St., San Francisco, Cal.

Harrold Tool & Forge Co.—See Wiebusch & Hilger.

Hargrave—See Cincinnati Tool Co.

Hubbard & Co., 62d St. & A. V. R. R., Pittsburgh, Pa.

K. & B.—See Kilborn & Bishop Co.

Kilborn & Bishop Co., Chapel & Lloyd Sts., New Haven, Conn. "Silex," "K. & B."

Klein-Logan Co., S. 13th & Breed Sts., Pittsburgh, Pa.

Kortick Mfg. Co., 345 First St., San Francisco, Cal.

Kraeuter & Co., Newark, N. J. (See page 711.)

Lowentraut Mfg. Co., P., 36-54 Brenner St., Newark, N. J.

Marcy Tool Works, Putnam, Conn.

Maximus—See Taunton Tool Co.

Mayhew Steel Products Co., 291 Broadway, New York, N. Y.

Milwaukee Tool & Forge Co., 220 Becher St., Milwaukee, Wis.

Mound Tool Co., Dept. D., Seventh & Hickory Sts., St. Louis, Mo. (See page 1109.)

Ohio Tool Co., Charleston, W. Va.

Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."

Pexto—See Peck, Stow & Wilcox Co.

Red Head—See S. & I. Co.

S. & I. Co., 55-57 Governor St., Springfield, Mass. "Red Head."

Sharpenezy—See Smith & Co.

Silex—See Kilborn & Bishop Co.

Smith & Co., H. D., Plantsville, Conn. "Sharpenezy."

Smith & Hemenway, 130 Coit St., Irvington, N. J.

Snell Mfg. Co., Fiskdale, Mass.

Storts & Son, John, 210-12 Vine St., Philadelphia, Pa.

Syracuse Twist Drill Co., 936 Grape St., Syracuse, N. Y.

Taunton Tool Co., 49 Adams St., Taunton, Mass. "Maximus."

Tuck Mfg. Co., 74 Ames St., Brockton, Mass.

V. & B.—See Vaughan & Bushnell Mfg. Co.

Vaughan & Bushnell Mfg. Co., 2114-38 Carroll Ave., Chicago, Ill. "V. & B."

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All Bars are 12 inches long

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B	¾	Solid	1¾	T	1¾	⅞	7
A	⅞	"	2¼	V	1¾	1	6¼
C	1	"	3	W	1¾	1¼	4½
E	1	½	2¼	X	1⅞	⅞	8¼
D	1⅛	½	3	Y	1⅞	1⅛	6¾
F	1⅛	⅝	2¾	Z	2	⅞	9¾
G	1¼	½	3¾	BB	2	1⅛	8¼
I	1¼	⅝	3¼	CC	2	1½	5¼
H	1¼	¾	3	DD	2¼	1	12¾
J	1⅜	⅝	4½	FF	2¼	1½	8½
O	1⅜	¾	3¾	GG	2½	1⅛	15
K	1⅜	⅞	3½	HH	2½	1⅝	11
L	1½	⅝	5½	JJ	2¾	1¼	18
M	1½	¾	5	KK	2¾	1¾	13½
N	1½	⅞	4½	LL	3	1½	20¼
P	1½	1	4	MM	3	2	15¼
Q	1⅝	¾	6¼	NN	3½	2	24¾
U	1⅝	⅞	5½	RR	4	2½	29¼
R	1⅝	1	4¾	SS	4½	3	33¾
S	1¾	¾	7½	TT	5	3¼	43½

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A	⅞	Solid	2¼ lbs.
E	1	½	2¼ "
I	1¼	⅝	3¼ "
O	1⅜	¾	3¾ "
U	1⅝	⅞	5½ "

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CHISELS, Cold and Cape (Cont'd)

Verona Tool Works, Oliver Bldg., Pittsburgh, Pa.
Vichek Tool Co., Cleveland, O.
Wiebusch & Hilger, 110 Lafayette St., New York, N. Y. (Sole Selling Agents for Harrold Tool & Forge Co., Columbiana, O.)

CHOCKS, Blocks and Clamps, Car Shipping

Carbo Steel Products Co., 2600 W. 111th St., (Morgan Park), Chicago, Ill.
Rohe Traction Block Co., First Ave. N. & Third St., Kenmare, N. D.

CHROME NICKEL STEEL—See Steel, Chrome Nickel

CHROME, STEEL—See Steel, Chrome

CHUCKING GRINDERS—See Grinders, Chucking

CHUCKS, Boring Mill

Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.
Meyers Co., W. F., Bedford, Ind.
Union Mfg. Co., 296 Church St., New Britain, Conn.

CHUCKS, Drill

Almond Mfg. Co., T. R., 1 Maple Ave., Ashburnham, Mass.
American Machine Co., 104 Wellington St., Hartford, Conn. "Ellison."
Cushman Chuck Co., 806 Windsor St., Hartford, Conn.
Detroit Twist Drill Co., Detroit, Mich. "Graham." (See page 955.)
Eastern Tube & Tool Co., 594 Johnson Ave., Brooklyn, N. Y. "Ettco."
Ellison—See American Machine Co.
Ettco—See Eastern Tube & Tool Co.
Goodell-Pratt Co., Greenfield, Mass.
Graham—See Detroit Twist Drill Co.
Horton & Son Co., E., Windsor Locks, Conn. "Morrow."
Jacobs Mfg. Co., Hartford, Conn. (See page 239.)
Little Giant—See Westcott Chuck Co.
Magic—See Modern Tool Co.
McCrosky Tool Corp., Meadville, Pa. "Wizard."
Millers Falls Co., Millers Falls, Mass. "Star."
Modern Tool Co., State & Second Sts., Erie, Pa. "Magic."
Morrow—See Horton & Son Co.
Morse Twist Drill & Machine Co., 163 Pleasant St., New Bedford, Mass.
National—See Oneida National Chuck Co.
Oneida National Chuck Co., Cedar St., Oneida, N. Y. "National."
Pratt Chuck Co., Frankfort, N. Y. "Pratt-Oneida."
Pratt-Oneida—See Pratt Chuck Co.
Presto—See Whitney Mfg. Co.
Skinner Chuck Co., 344 Church St., New Britain, Conn.
Standard Tool Co., 6900-34 Central Ave., Cleveland, O.
Star—See Millers Falls Co.
Trump Bros. Machine Co., Beach & Anchorage Sts., Wilmington, Del.
Union Mfg. Co., 296 Church St., New Britain, Conn.
Wahlstrom Tool Co., 5520 Second Ave., Brooklyn, N. Y.
Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 735.)
Westcott Chuck Co., E. Walnut St., Oneida, N. Y. "Little Giant."
Whitney Mfg. Co., Hartford, Conn. (See page 231.)
Whiton Machine Co., D. E., 190 Howard St., New London, Conn.
Wizard—See McCrosky Tool Co.

CHUCKS, Lathe

Almond Mfg. Co., T. R., 1 Maple Ave., Ashburnham, Mass.
American Tool & Machine Co., 10 High St., Boston, Mass.
Barker—See Thomas Elevator Co.
Cushman Chuck Co., 806 Windsor St., Hartford, Conn.
F-W—See Terkelsen & Wennberg.
Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.
Hoggson & Pettis Mfg. Co., 141 Brewery St., New Haven, Conn. "Sweetland."
Horton & Son Co., E., Windsor Locks, Conn.
Millers Falls Co., Millers Falls, Mass. "Star."
National—See Oneida National Chuck Co.
Oneida National Chuck Co., Cedar St., Oneida, N. Y. "National."
Pratt Chuck Co., Frankfort, N. Y. "Pratt-Oneida."
Pratt-Oneida—See Pratt Chuck Co.
Skinner Chuck Co., 344 Church St., New Britain, Conn.
Star—See Millers Falls Co.
Sweetland—See Hoggson & Pettis Mfg. Co.
Thomas Elevator Co., 20 S. Hoyne Ave., Chicago, Ill. "Barker."
Terkelsen & Wennberg, 326 A St., Boston, Mass. "F-W."
Trump Bros. Machine Co., Beech & Anchorage Sts., Wilmington, Del.
Union Mfg. Co., 296 Church St., New Britain, Conn.
Westcott Chuck Co., E. Walnut St., Oneida, N. Y.
Whiton Machine Co., D. E., 190 Howard St., New London, Conn.

CHUCKS, Magnetic

D. & W. Fuse Co. (Elmwood Sta.), Providence, R. I.
Heald Machine Co., Worcester, Mass. (See page 475.)
Kar Engineering Co., 79 E. 130th St., New York, N. Y.
Simmons—See Taft-Peirce.
Taft-Peirce Mfg. Co., Woonsocket, R. I. "Simmons." (See page 849.)
Walker Co., O. S., Rockdale St., Worcester, Mass.

CHUCKS, Planer

Skinner Chuck Co., 344 Church St., New Britain, Conn.
Union Mfg. Co., 296 Church St., New Britain, Conn.

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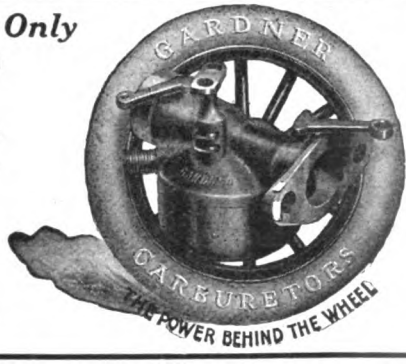
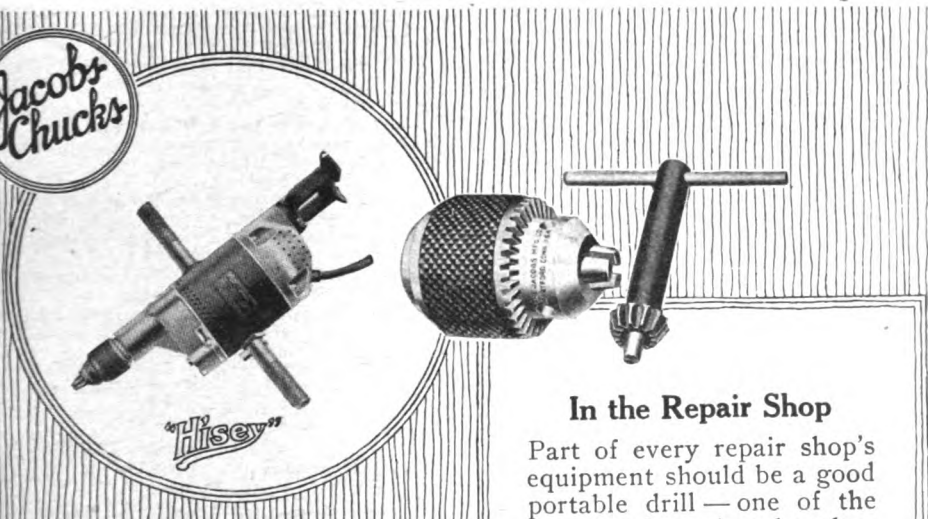


Jacobs Chucks



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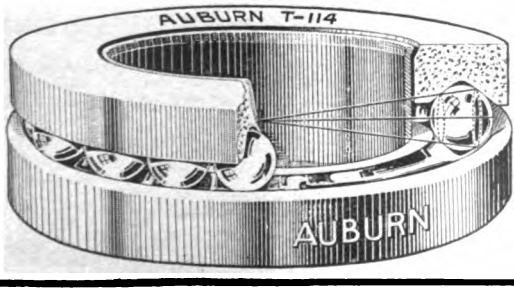

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CIRCLE CUTTERS—See Cutters, Washer or Gasket

CIRCUIT TESTING INSTRUMENTS—See Instruments, Electrical Circuit Testing

CIRCULAR GLASS CUTTERS—See Cutters, Circular Glass

CIRCULATING PUMPS — See Pumps, Water

CIRCULATION GAGES—See Gages, Water Circulation

CIRCULATION REGULATORS—See Regulators, Water Circulating

CLAMPS, BODY BUILDERS—See Clamps, Woodworkers

CLAMPS, BOW—See Holders, Top

CLAMPS, BOW, FOR FORDS—See Clamps, Top Bow

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Davey—See Davidson, F. J.
Davidson, F. J., 186 Kirby St. W., Detroit, Mich. "Davey." (See page 675.)
Giant—See American Auto Products Co.
Monarch Carriage Goods Co., Cincinnati, O. (See page 407.)
Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.

CLAMPS, Hose

(For Radiator Hose or Tire Pump Tubing)

Aco—See Asch and Co., Inc.
Allen Mfg. Co., W. D., 566 W. Lake St., Chicago, Ill.
American Brass Products Co., Pottstown, Pa.
American Cushion Spring Co., Kalamazoo, Mich.
American Stamping Co., 31 Burchard St., Battle Creek, Mich.
Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. (See page 81.)
Asch & Co., Inc., 16-24 W. 61st St., New York, N. Y. "Aco." (See page 275.)
Bartlett Mfg. Co., 428 E. Lafayette Ave., Detroit, Mich. "Bellamy."
Bellamy—See Bartlett Mfg. Co.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Brown Stamping Co., Toledo, O.
Bull Dog—See Oliver Metal Stamping Co.
Catelain Andrae G., 1446-48 Indiana Ave., Chicago, Ill.
Champion Pneumatic Machinery Co., 1402 Michigan Ave., Chicago, Ill. (See page 401.)
Cooper—See Otis-Flagg Corp.
Cooper Clamp Co., 737 Park Ave., Brooklyn, N. Y.
Crabill Hose Clamp Co., 310 Hamlin St., Battle Creek, Mich.
D'Arcy Spring Co., Kalamazoo, Mich. (See page 891.)
Davey—See Davidson, F. J.
Davidson, F. J., 9688 Prairie Ave., Detroit, Mich. "Davey." (See page 675.)
Elkin Hose Clamp Co., 65-67 Dey St., New York, N. Y.
Esco—See Stevens & Co.
Faw, J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributors for Ideal Clamps.) (See page 241.)
Federal Tin Co., 11 E. Barre St., Baltimore, Md.
Flexo—See McChesney & Co.
Flexo-Adjusto—See McChesney & Co.
Globe Machine & Stamping Co., 1200-50 W. 76th St., Cleveland, O. (See page 1049.)
Harrisburg Stamping Co., Harrisburg, Pa. "Lightning." (See page 241.)
Hers, 182 Locust Ave., New York, N. Y. "Lasso." (See page 713.)
Higgins Machine Works, 25 Keystone St., Buffalo, N. Y.
Ideal Clamp Mfg. Co., 198-202 Bradford St., Brooklyn, N. Y. (See page 241.)
Kennedy & Sons Revolving Hose Coupling Co., 2931 Fulton St., Chicago, Ill.
Lasso—See Hers.
Lightning—See Harrisburg Stamping Co.
McChesney & Co., J. S., 145 W. Ohio St., Chicago, Ill. "Flexo," "Flexo-Adjusto."
Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.
Morgan Mfg. Co., Court St., Keene, N. H. (See page 751.)
Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)
Newark Stamping & Foundry Co., Newark, O. "Thompson."
Oliver Metal Stamping Co., 217-23 W. Illinois St., Chicago, Ill. "Bull Dog."
On Quick—See Pennsylvania Stamping Co.
Otis-Flagg Corp., 515 W. Market St., York, Pa. "Cooper."
Pennsylvania Stamping Co., York, Pa. "On Quick."
Presto—See Cooper Clamp Co.
Schrader's Son, A., Brooklyn, N. Y. (See page 768.)
Sherman Mfg. Co., H. B., Battle Creek, Mich. (See page 293.)
Stevens & Co., 375 Broadway, New York, N. Y. "Esco." (See page 1147.)
Thompson—See Newark Stamping & Foundry Co.
United Steel & Wire Co., 27 Fonda Ave., Battle Creek, Mich.
Universal Industrial Corp., Hackensack, N. J. (See Page 241.)
Yerdon, Wm., Main & Center Sts., Fort Plain, N. Y.

CLAMPS, Machinists

Armstrong Bros. Tool Co., 304 N. Francisco Ave., Chicago, Ill. (See page 1007.)
Athol Machine Co., Athol, Mass.

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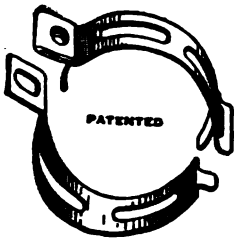
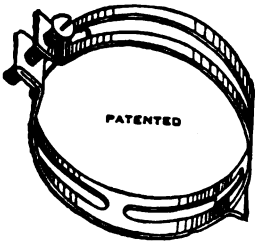


"Lightning" Hose Clamps



Quick adjustment—only screw driver necessary.
Made in two pieces—easy to put on, and tighten.
Each clamp fits size and kind of hose it is made for.

Write us today for prices to the trade.

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UNIVERSAL ADJUSTABLE HOSE CLAMP

"UNIVERSAL SENIOR"
Fits all size hose from 1" to 3"
"UNIVERSAL JUNIOR"
Fits all sizes from ¼" to 1½"

Let your next order be for the "UNIVERSAL" and be convinced of its superiority

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Fawsco Auto Crawlers, American-Standard Ignition Cables, Lighting Wires and Lamp Cords, Ignition Wiring Assemblies, Lamp Electrifiers, Oil Cock Wrenches, Red Seal Spark Plugs, Automobile Fuses, Open End and Spark Plug Wrenches, Steel Socket Wrenches.

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CLAMPS, Machinists (Continued)

Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn.

Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.

Cincinnati Tool Co., Main Ave., Norwood, O. "Hargrave."

Fort Dearborn Mfg. Co., First St., Rock Falls, Ill.

Goodell-Pratt Co., Greenfield, Mass.

Hargrave—See Cincinnati Tool Co.

Le Count, Wm. G., Merritt St., South Norwalk, Conn.

Mark Mfg. Co., 111 W. Washington St., Chicago, Ill.

Pawtucket Mfg. Co., 327 Pine St., Pawtucket, R. I.

Phoenix Hardware Co., 49-53 Illinois St., Buffalo, N. Y.

Starrett Co., L. S., Athol, Mass.

Taylor Mfg. Co., James L., 108-28 Parker Ave., Poughkeepsie, N. Y.

Williams & Co., J. H., 38 Richards St., Brooklyn, N. Y. (See page 1081.)

CLAMPS, Oxy-Acetylene Welders

Salter Motor Mfg. Co., 1516-18 Oakland Ave Kansas City, Mo.

CLAMPS, PISTON, FOR FORDS—See Vises, Piston

CLAMPS, ROPE—See Clamps, Wire Rope

CLAMPS, Special Cantilever Spring Support

Covington Garage & Machine Co., Covington, Pa.

Emco Mfg. Co., 4 Griswold St., Binghamton, N. Y. "Taber." (See page 497.)

CLAMPS, Spring Repair

(For the temporary repair of broken leaf springs)

Buckeye—See Central Brass & Fixture Co.

Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 174 and 175.)

CLAMPS, Storage Battery Holding Down

Rempes Electric Co., G. H., 12520 Euclid Ave., Cleveland, O.

CLAMPS, TOP BOW—See Holders, Top

CLAMPS, Top Bow, for Fords

(To take the place of the straps to hold down top)

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 174 and 175.)

Mosco—See Motor Specialties Co.

Motor Specialties Co., Waltham, Mass. "Mosco."

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)

CLAMPS, Transmission Band Assembling, for Fords

American Auto Products Co., 1319 L. St., N. W., Washington, D. C. "Jiffy."

Jiffy—See American Auto Products Co.

CLAMPS, Transmission Drum Repairing for Fords—See Clamps or Vises, Transmission Drum Repairing

CLAMPS, Tube Splicing Mandrel

Pechstein Iron Works, Keokuk, Ia.

CLAMPS or VISES, Transmission Drum Repairing for Fords

(Bench Clamp or Vise to hold drum when reaming bearing bushing; for Drum Holders for use with stationary reamer.—See Holders, Transmission Drum for Fords.)

American—See Fairbanks Co.

Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill. "American.") (See pages 137 to 140.)

Railway Specialty Co., Atchison, Kans. "Rysco."

Rysco—See Railway Specialty Co.

Service Station Equipment Co.—See Fairbanks Co.

Wilson, K. R., 10-16 Lock St., Buffalo, N. Y. (See page 611.)

CLAMPS, Wire Rope

(For Brake Cables)

Hazard Mfg. Co., 81 E. Ross St., Wilkes-Barre, Pa.

Lanz & Sons, Mathew, 2907 Carson St., Pittsburgh, Pa.

Roebling's Sons Co., John A., S. Broad & Canal Sts., Trenton, N. J.

Trenton Iron Co., Trenton, N. J.

Wilcox, Crittenden & Co., 2 S. Main St., Middletown, Conn.

CLAMPS, Woodworkers

Batavia Clamp Co., 85 Center St., Batavia, N. Y. "Colts."

C-S Co—See Chapin-Stephens Co.

Chapin-Stephens Co., Pine Meadow, Conn. "C-S Co."

Cincinnati Tool Co., Main Ave., Norwood, O. "Hargrave."

Colts—See Batavia Clamp Co.

Dann Bros. & Co., 84 Franklin St., New Haven, Conn.

Eagle—See Woodruff & Sons Co.

Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.

Grand Rapids Hand Screw Co., 950 N. Front St., Grand Rapids, Mich.

Hargrave—See Cincinnati Tool Co.

Josef Mfg. Co., E. E., 14 Perry St., Buffalo, N. Y.

Mark Mfg. Co., 111 W. Washington St., Chicago, Ill.

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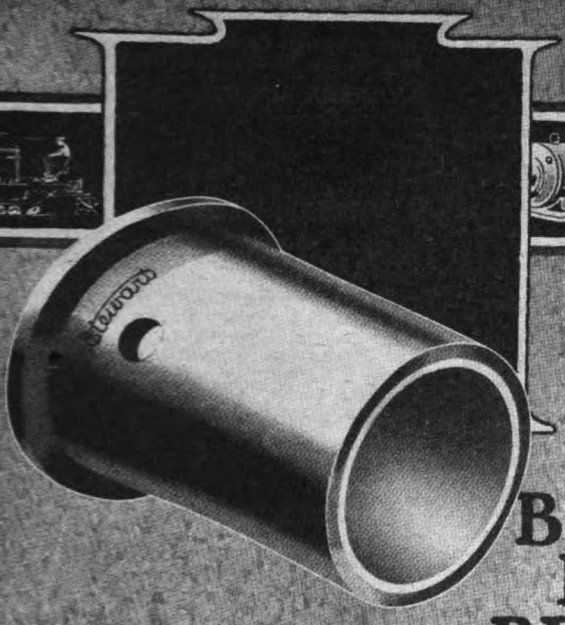

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Inseparable

—Babbitt and Bronze—

¶ By a unique and proven process of cohesion of metals, a two-part bearing—babbitt and bronze—has been produced which has the rigidity and strength of a single metal. This bronze-back bearing—the Stewart—is designed especially for use in automobile, motor truck, tractor and air craft engines, electrical equipment and on any machine requiring a smooth-running, long-lived bearing.

¶ Through this special Stewart process of bearing construction, the babbitt lining and bronze-back are so united that they are practically one metal.

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CLAMPS, Woodworkers (Continued)

Mount Carmel—See Woodruff & Sons Co.

National Metal Products Co., 1016 E. 11th St., Indianapolis, Ind.

National Novelty Corp., New York, N. Y.

O'Neil, Jr., J. H., Pawtucket, R. I.

Ohio Tool Co., Charleston, W. Va.

Oliver Machinery Co., 1025 Clancy St., N. E., Grand Rapids, Mich.

Palmer & Sons, Albert E., 312 W. Main St., Owosso, Mich.

Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."

Pexto—See Peck, Stow & Wilcox Co.

Phoenix Hardware Co., 49-53 Illinois St., Buffalo, N. Y.

Taylor Mfg. Co., James L., 108-28 Parker Ave., Poughkeepsie, N. Y.

Williams & Co., J. H., 38 Richards St., Brooklyn, N. Y. (See page 1081.)

Woodruff & Sons Co., Walter W., Mount Carmel, Conn. "Eagle," "Mount Carmel."

CLARIFIERS, Centrifugal

De Laval Separator Co., New York, N. Y. (See page 245.)

CLARIFIERS, OIL—See Separators, Oil

CLEANERS, Acetylene Burner

Barnard Specialty Co., 3300 Maple Ave., Los Angeles, Cal.

Edelmann & Co. E., 2638 N. Crawford Ave., Chicago, Ill.

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)

CLEANERS, Air

(Device to attach to air intake of carburetors to remove sand and dust from the entering air)

Bennett—See Wilcox-Bennett Carburetter Co.

Branford—See Malleable Iron Fittings Co.

Donaldson Engineering Co., 693 Raymond St., St. Paul, Minn.

F-S Machine Specialties, 171 Washington St., Newark, N. J. "Martian."

Fageol Motors Co., 107th Ave. & Hollywood Blvd., Oakland, Cal.

Holley Kerosene Carburetor Co., Vancouver Ave. & P. M. R. R., Detroit, Mich.

Leonard Air Washer Co., Kalamazoo, Mich.

Malleable Iron Fittings Co., Branford, Conn. "Branford." (See page 245.)

Martian—See F-S Machine Specialties.

Medway Sales Corp., Racine, Wis. "New Racine." (See page 377.)

Midwest Engine Co., 19th St. & Martindale Ave., Indianapolis, Ind.

National Air Washer Co., Racine Wis.

New Racine—See Medway Sales Corp.

Orem Motor Protector Co., 2827 N. Calvert St., Baltimore, Md.

Parrett—See R-W Co.

Pomona—See Vortox Mfg. Co.

R-W Co., 332 Michigan Ave., Chicago, Ill. "Parrett."

Siphon—See Tractor Appliance Co.

Tractor Appliance Co., 210 Monroe St., New Holstein, Wis. "Siphon."

Twin Parts Steel & Tractor Co., 1713 Broadway, Superior, Wis.

Vortox Mfg. Co., 155 W. Commercial St., Pomona, Cal. "Pomona."

Wilcox-Bennett Carburetter Co., 1030 Marshall St., N. E., Minneapolis, Minn. "Bennett."

CLEANERS, BURNER—See Cleaners, Acetylene Burner

CLEANERS, Celluloid

Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "C-E-Z." (See page 267.)

C-E-Z—See Adams & Elting Co.

Em-C-Lac Co., Smith St., Far Rockaway, N. Y.

Xylo Mfg. Co., Uniontown, Pa. "Xylolust," "Xylonene." (See page 227.)

Xylolust—See Xylo Mfg. Co.

Xylonene—See Xylo Mfg. Co.

CLEANERS, Engine

(For cleaning oil and grease from engines and chassis by a compressed air and gasoline or kerosene spray; for steam engine cleaners—See Boilers, Steam Engine Cleaning)

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for Wagner Cleaners.) (See page 275.)

Binks—See Star Brass Works.

Bishop & Babcock Co., 1200 E. 55th St., Cleveland, O. "Eureka."

Cleveland Faucet Co., 708 Frankfort Ave., N. W., Cleveland, O.

Daniels Mfg. Co., Atchison, Kans.

Eureka—See Bishop & Babcock Co.

Lipman Pump Works, 100 Shirland Ave., Beloit, Wis. "Onceover."

Onceover—See Lipman Pump Works.

Romort Mfg. Co.—See Zinke Co.

Star Brass Works, 3120 Carroll Ave., Chicago, Ill. "Binks."

Stewart Mfg. Co., Inc., Oakland, Cal. (See page 1119.)

Wagner Specialty Co., 1902 Broadway, New York, N. Y.

Zinke Co., 1322-28 Michigan Ave., Chicago, Ill. (Sales Department for Romort Mfg. Co., Oakfield, Wis.) (See pages 310 and 311.)

CLEANERS, Fabric

(Compounds for cleaning upholstery or slip covers; for vacuum cleaners—See Cleaners, Vacuum)

Harner Mfg. Co., E. C., 143 Pipestone St., Benton Harbor, Mich.

K. K. K.—See Killen Kemical Ko.

Killen Kemical Ko., Lansing, Mich. "K. K. K." (See page 263.)

Nacto Cleaner Corp., 2171-73 Madison Ave., New York, N. Y.

Percama—See Perkins-Campbell Co.

Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. "Percama." (See page 317.)

Pyrene Mfg. Co., 17 E. 49th St., Nw York, N. Y.

Woodtite Laboratories, Modesto, Cal. "Textite."

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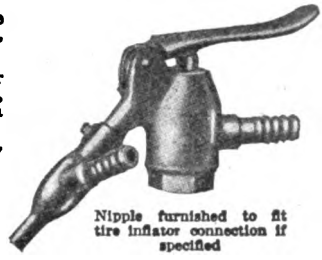
Every garage or factory needs one or more of these AUTO CLEANERS, because: It cleans wire wheels, hoods, tops and cushions.

It sprays priming coats of paint on running gear or bodies. It cleans motors, radiators, transmissions, etc., —in a word, it has a hundred various uses around a garage or motor car factory.

Sells for only $3 f. o. b. Factory or $3.50 with 12" extension nozzle.



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The DE LAVAL Method of Clarifying Varnish, Japan, Enamel, Etc.

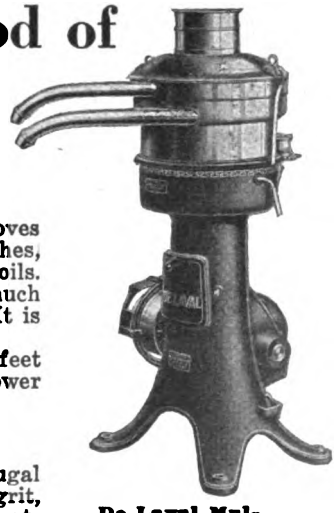
The De Laval Multiple Clarifier completely removes the finest particles of dirt and sediment from varnishes, Japans, lacquers, shellacs, enamels and test block oils.

The clarification is instantaneous and done at much lower cost than is possible by filtration methods. It is also much more thorough than the older methods.

The Multiple Clarifier requires about two square feet of floor space and less than one and a half horse power to drive.

Write nearest office for Bulletin No. 200.

The De Laval Oil Purifier is another new centrifugal machine, which instantly and perfectly removes grit, dirt, carbon, water and other impurities from lubricating and cutting oils, restoring them to their original brilliancy. Ask for Bulletins No. 100 and No. 102.



De Laval Multiple Clarifier
Made in 2 sizes and for steam, electric or belt drive.

THE DE LAVAL SEPARATOR COMPANY

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World's largest makers of centrifugal machinery

Dealers Wanted To Distribute

PARAGON BATTERIES

Guaranteed 3 Years.

We Also Manufacture Batteries With Your Own Trade Name Upon Them.

—WRITE US FOR OUR PROPOSITION—

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CLEANERS, Glass Wind Shield

(For cleaning wind shield glass of snow or rain; for chemical cleaners or preventatives—See Compounds, Glass Wind Shield)

Alcemo Mfg. Co., 120 Bridge St., Newark, N. J. "Klearsight." (See page 247.)

American Automatic Devices Co., 515 W. Monroe St., Chicago, Ill. "Clear Vision." (See page 643.)

American Povar Corp., 536 W. 58th St., New York, N. Y. "Clerzit."

Anti-Dim—See Teeaness Products Co.

Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. (See page 81.)

Auto Scope—See White Products Co.

Big B—See Bruening Windshield Co.

Bruening Windshield Co., 1353 Chester Ave., Cleveland, O. "Big B."

C-Cleer—See Neu Metal Products Corp.

Clear-O-Scope Co., Angola, Ind. "Pioneer."

Clearview—See D'Eyraud, Louis.

Clear Vision—See American Automatic Devices Co.

Clerzit—See American Povar Corp.

Crescent—See Trico Products Corp.

D'Eyraud, Louis, 452 W. 16th St., Los Angeles, Cal. "Clearview." (See page 247.)

Folberth Auto Specialty Co., 7914-22 Lake Ave., Cleveland, O.

Gabriel Mfg. Co., 1421 E. 40th St., Cleveland, Ohio.

Gray-Heath Co., 1440 S. Michigan Ave., Chicago, Ill. (See page 741.)

H. & E. Co., 24 Porter St. (Jamaica Plains), Boston, Mass. "Windmill."

Handee—See Racine Handy Mfg. Co.

Hardware Mfg. Co., 1410 Dearborn St., Seattle, Wash.

Hartenstein, R. P., 542 S. Dearborn St., Chicago, Ill. "Utility."

Hicks Mfg. Corp., 7508-12 Saginaw Ave., Chicago, Ill.

J. T. Auto Devices Co., 1517 Fairfield Ave., Cleveland, O. (See page 247.)

Jiffy—See La Vietes Mfg. Co.

K. M. Mfg. Co., Factories Bldg., Toledo, O.

Kirk-O Mfg. Co., Atlanta, Ga.

Klearsight—See Alcemo Mfg. Co.

La Vietes Mfg. Co., 756 Garden St., Hartford, Conn. "Jiffy."

Malco—See Malouf Co.

Malouf Co., B. I., 146 S. W. Temple St., Salt Lake City, Utah. "Malco."

Marvel Accessories Mfg. Co., 1220 W. Sixth St., Cleveland, O.

Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich.

Mosher, J. H., 23 Walnut St., Seneca Falls, N. Y. "Tu-In-One."

Nagel Electric Co., W. G., Toledo, O. (See page 1141.)

Outlook Co., 5518 Euclid Ave., Cleveland, O.

Pioneer—See Clear-O-Scope Co.

Presto-Felt Mfg. Co., Superior & Jackson Sts., Toledo, O.

Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."

Ran-E-Way—See Sunbeam Mfg. Co.

Seco Mfg. Co., Nasby Bldg., Toledo, O. "Wizard."

See Safe—See Stadeker Metal Specialty Co.

Shi-Nup Products Co., 1130 Main St., Racine, Wis.

Stadeker Metal Specialty Co., 310 S. Canal St., Chicago, Ill. "See Safe."

Sunbeam Mfg. Co., Polson Bldg., Seattle, Wash. "Ran-E-Way."

Teeaness Products Co., New York, N. Y. "Anti-Dim."

Ternstedt Mfg. Co., Artillery & Buster Ave., Detroit, Mich. (See page 799.)

Trico Products Corp., 624-28 Ellicott St., Buffalo, N. Y. "Crescent."

Tu-In-One—See Mosher, J. H.

Utility—See Hartenstein, R. P.

W. B.—See Wildenberg Bros.

White Products Co., 2204 S. Michigan Ave., Chicago, Ill. "Auto Scope."

Wildenberg Bros., 356 W. 50th St., New York, N. Y. "W. B."

Windmill—See H. & E. Co.

Wizard—See Seco Mfg. Co.

CLEANERS, Spark Plug

(For Spark Plug Brushes—See Brushes, Spark Plug)

Ace—See Wallace Mfg. Co.

Buckeye—See Central Brass & Fixture Co.

Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."

Champion Spark Plug Co., 801 Avondale Ave., Toledo, O. "Minute." (See page 713.)

Minute—See Champion Spark Plug Co.

Wallace Mfg. Co., Newark, N. J. "Ace." (See page 247.)

CLEANERS, STEAM ENGINE—See Boilers, Steam Engine Cleaning

CLEANERS, UPHOLSTERY—See Cleaners, Fabric; also Cleaners, Vacuum; also Nozzles, Air

CLEANERS, Vacuum

Aagar Sales Co., 1342 Spring Garden St., Philadelphia, Pa.

Electric Vacuum Cleaner Co., Euclid & Ivanhoe Rd., Cleveland, O. "Handy Vac."

Franklin Products, 1052 S. Clinton St., Syracuse, N. Y. "La France."

Frantz Premier Co., 1111 Power Ave., N. E., Cleveland, O. "Handy."

Handy—See Frantz Premier Co.

Handy Vac—See Electric Vacuum Cleaner Co.

La France—See Franklin Products.

Van Auto Vacuum Co., 519 California St., San Francisco, Cal.

CLEANERS, WIND SHIELD—See Cleaners, Glass Wind Shield; also Compounds, Glass Wind Shield

CLEANING TOOLS—See Tools, Terminal Cleaning

CLEATS, Fibre Wiring

(See also Fibre, Hard)

American Vulcanized Fibre Co., 573 Equitable Bldg., Wilmington, Del. (See page 415.)

Blake Signal & Mfg. Co., Boston, Mass. (See page 1117.)

Continental Fibre Co., Newark, Del. (See page 263.)

Diamond State Fibre Co., Bridgeport, Pa.

Franklin Products, 1052 S. Clinton St., Syracuse, N. Y.

Hartson Co., L. M., North Windham, Conn.

National Fibre & Insulation Co., Box 281, Yorklyn, Del. "S-S." (See page 415.)

S-S—National Fibre & Insulation Co.

Spaulding & Sons Co., J., Wheeler St., Tonawanda, N. Y.

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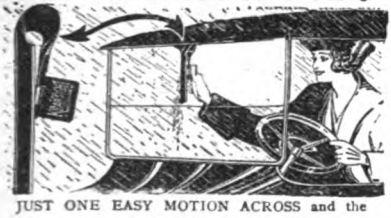
ELIMINATES TIRE TROUBLES

Seals Punctures—Stops Slow Leaks

Gives 50% more mileage. Preserves tubes. 7 years' success in 40 countries. Not a filler. Does not affect resiliency. Keeps tires fully inflated. Prevents rim cuts. Stops slow leaks. Is not a filler. Makes strong the weak link in motoring.



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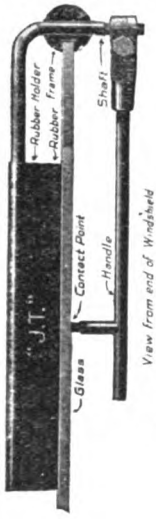
The "J. T." Windshield Cleaner



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"CLEARVIEW REGULAR"—a windshield cleaner.
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Write for our proposition

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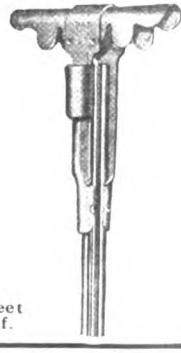

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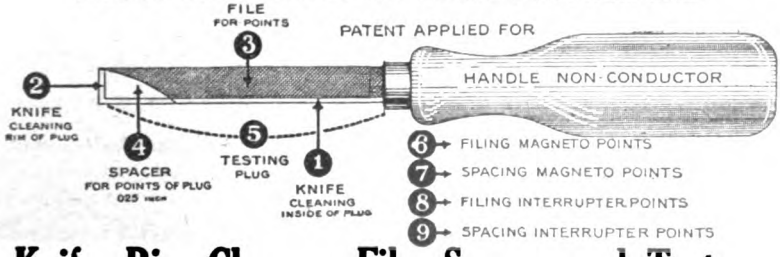
NINE OPERATIONS WITH ONE BLADE



Knife, Rim Cleaner, File, Spacer and Tester

Retail Price, 50 cents each

WALLACE MANUFACTURING CO. Inc., Newark, New Jersey, U.S.A.

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CLEATS, Fibre Wiring (continued)

Standard Fibre Co., 11-15 Miller St., Somerville, Mass.
Wilmington Fibre Specialty Co., Wilmington, Del. (See page 249.)

CLEATS, WIRING—See Cleats, Fibre Wiring

CLEVIS ANTI-RATTLERS FOR FORDS—See Anti-Rattlers, Brake Rod

CLEVIS PINS—See Pins, Aircraft Clevis

CLEVISES, AUTOMATIC TRACTOR RELEASE—See Hitches, Automatic Tractor

CLINCH RIVETS—See Rivets, Tubular and Clinch

CLINOMETERS, Airplane

Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) (See page 301.)
Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.

CLIPPERS, Bolt and Rivet

(Hand Power)

Allen-Randall—See Porter, H. K.
Easy—See Porter, H. K.
Elm City—See Schollhorn Co.
Helwig Mfg. Co., Seventh & Locust Sts., St. Paul, Minn.
Mann Corp., Kankakee, Ill.
Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y. "New Easy."
New Easy—See Metal Stamping Co.
New Easy—See Porter, H. K.
O. K.—See Porter, H. K.
Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."
Pexto—See Peck, Stow & Wilcox Co.
Porter, H. K., Everett, Mass. "Easy," "New Easy," "Allen-Randall," "O. K." (See page 249.)
Roberts Mfg. Co., Park & Beacon Sts., Somerville, Mass. "Victor."
Schollhorn Co., Wm., Wooster, Wallace & Chapel Sts., New Haven, Conn. "Elm City."
Victor—See Roberts Mfg. Co.

CLIPPERS, RIVET—See Clippers, Bolt and Rivet

CLIPS, BATTERY CHARGING—See Clips, Electrical Test

CLIPS, BATTERY HOLDING DOWN—See Clamps, Storage Battery Holding Down

CLIPS, Curtain

(For attaching curtains to wind shields and bow sockets)

Anchor—See North & Judd Mfg. Co.
Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y. "Perfection."
North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn. "Anchor."
Perfection—See Metal Stamping Co.

CLIPS, Electrical Test

(For testing electrical circuits at any point without removing insulation from wires or disconnecting)

Automobile Ignition Supply Co., 1124 Michigan Blvd., Chicago, Ill. "Walker."
Bulldog—See Reliable Mfg. Co.
Duchanois Electric Mfg. Co., C. F., 663 Bryson St., Youngstown, O.
F.-F.—See France Mfg. Co.
Frankel Display Fixture Co., 177 Hudson St., New York, N. Y.
France Mfg. Co., 10325 Berea Rd., Cleveland, O. "F.-F."
Hartung, Charles F., 108 W. Second St., Los Angeles, Cal.
Mueller Electric Co., 2139-43 Fairmount Rd., Cleveland, O.
Reliable Mfg. Co., 2819 Prospect Ave., Cleveland, O. "Bulldog."
Walker—See Automobile Ignition Supply Co.

CLIPS, Fuse

Mutual Electric & Machine Co., 858 W. Fort St., Detroit, Mich.

CLIPS, HAT—See Hangers, Hat

CLIPS, Motorcycle Toe

Torrington Co., Torrington, Conn.

CLIPS, Spring

(See also Forgings, Drop)

Bonney Vise & Tool Works, Allentown, Pa. (See page 437.)
Brewer Tichener Corp., Cortland, N. Y. (See page 567.)
Clapp Mfg. Co., E. D., 305 W. Genesee St., Auburn, N. Y.
Cleveland Hardware Co., 4500 Hamilton Ave., Cleveland, O.
Columbus Bolt Works Co., Columbus, O. (See page 155.)
Steel Forgings Co., Brotherton Rd., Cincinnati, O.
Strieby & Foote Co., 301 Ogden St., Newark, N. J.
Union Forging Co., Union, N. Y. (See page 249.)

CLIPS, TEST—See Clips, Electrical Test

CLIPS, TOE—See Clips, Motorcycle Toe

CLIPS, Trimmers

Buser-Poston Tufting Machine Co., Chillicothe, O.
Staples & Hanford Co., Newburgh, N. Y.

CLOCK DIALS—See Dials, Luminous

CLOCKS, Aircraft

Chelsea Clock Co., 10 State St., Boston, Mass.
Ingersoll & Bros., Robert H., 30 Irving Place, New York, N. Y.
Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) (See page 301.)

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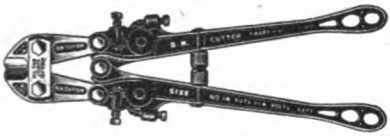
Trade
O. K.
Mark
CUTTERS



10-Inch

Clipper Cut Jaws,
for 3-16-in. annealed bolts in the thread, or 3-16-in. soft rivets.

Center Cut Jaws,
for 3-16-in. soft rods.

14-Inch

Clipper Cut Jaws,
for 1-4-in. annealed bolts in the thread, or 1-4-in. soft rivets.

Center Cut Jaws,
for 1-4-in. soft rods.

Insulated Handles if desired.

H. K. PORTER
EVERETT, MASS.
"Easy," "New Easy" and Allen Randall Bolt Clippers

Largest Makers of Auto Spring Clips
For Passenger Cars and Trucks

The Union Forging Co.
Union, N. Y.

We are the largest Manufacturers of Fibre Specialties in the world

We have a capacity of three million washers daily, one million handles, knobs, etc., and a million weekly capacity for various other fibre specialties.

In addition to this, we make at least one hundred thousand different kinds of FIBRE specialties a year, thus showing the versatility of our plant.

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Get in touch with our nearest office today. They will immediately tell you if we can make your product of fibre in place of the more expensive product you are now using. This advice may save you thousands of dollars a year—it has for others, why not you?

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Chicago, Ill.....614 W. Adams Street
Cincinnati, Ohio.....141 E. 4th Street
Cleveland, Ohio...836 New Guardian Bldg.
Denver, Col.....209 Ideal Bldg.
Detroit, Mich.....1002 Ford Bldg.
Los Angeles, Cal.....
.....4th and Main, San Fernando Bldg.
Montreal, Canada..131-135 Youville Square
New York City.....36 Warren Street
Philadelphia, Pa.....Bourse Bldg.
Pittsburgh, Pa.....209 Alpine Ave.
Portland, Ore.....Corbett Bldg.
Salt Lake City, Utah.....
.....1015 New House Bldg.
San Francisco, Cal.Postal Telegraph Bldg.
Seattle, Wash.....2118 Smith Bldg.
St. Louis, Mo.....
.....624 Federal Reserve Bank Bldg.

Home Office.....Wilmington, Del.

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Wilmington, Delaware

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CLOCKS, Aircraft (Continued)

Thomas Clock Co., Seth., 19 W. 44th St., New York, N. Y.
Waltham Watch Co., Waltham, Mass.
Wittnauer Co., A., 80 W. 36th St., New York, N. Y.

CLOCKS, DASH BOARD—See Clocks, Electrically Wound; also Clocks, Hand Wound

CLOCKS, Electrically Wound

(For mounting on dash or instrument boards; for Limousine Clocks—See Watches, Limousine; also Cases, Toilet)

Boston Clock Co., 10 State St., Boston, Mass.
Connecticut Clock Co., 89 Woodbine St., Hartford, Conn.

CLOCKS, Hand Wound

(For mounting on dash or instrument boards; See also Holders, Watch; for limousine clocks—See Watches, Limousine; also Cases, Toilet)

Belmont—See New Haven Clock Co.
Boston Clock Co., 10 State St., Boston, Mass.
Chelsea Clock Co., 10 State St., Boston, Mass.
Cowl—See New Haven Clock Co.
Didisheim & Bro., Hipp, 54 Maiden Lane, New York, N. Y. "Octava."
Duane—See New Haven Clock Co.
Keyless Auto Clock Co., 246 W. 59th St., New York, N. Y.
Nebo—See New Haven Clock Co.
New Haven Clock Co., 133 Hamilton St., New Haven, Conn. "New Ormond," "Duane," "Belmont," "Nebo," "Cowl."
New Ormond—See New Haven Clock Co.
Octava—See Didisheim & Bro.
Peck-Hamre Mfg. Co., Berlin, Wis.
Sessions Clock Co., Forestville, Conn. (See page 259.)
Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) (See page 301.)

CLOCKS, Steering Wheel, for Fords

(See also Holders, Watch)

B-4-U—See Eisenstadt Mfg. Co.
Eisenstadt Mfg. Co., Olive & 12th Sts., St. Louis, Mo. "B-4-U."

CLOCKS, Time Recording and Watchman's

(For Time Stamps—See Stamps, Time)

Chicago Watchmans Clock Co., 1526 S. Wabash Ave., Chicago, Ill.
Eco Clock Co., 200 Congress St., Boston, Mass.
Follett Time Recording Co., 9-11 W. Broadway, New York, N. Y.
Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.
Hardinge Bros., 1770 Berteau Ave., Chicago, Ill.
International Time Recording Co., Endicott, N. Y.
Kastens, Henry, 419½ W. 27th St., New York, N. Y. (See page 251.)
Newman Clock Co., 436 Broadway, New York, N. Y.
Simplex Time Recorder Co., Time Ave., Gardner, Mass.

CLOCKS, WATCHMAN'S—See Clocks, Time Recording

CLOSETS, CLOTHES—See Lockers, Metal

CLOTH, ABRASIVE—See Paper, Emery and Sand

CLOTH, BRASS WIRE—See Cloth, Wire

CLOTH, BROAD—See Broadcloth

CLOTH, EMERY AND SAND—See Paper, Emery and Sand

CLOTH, Enameled

Armstrong Cork Co., 124 23d St., Pittsburgh, Pa. (See page 449.)
Chandler Oil Cloth & Buckram Co., East Taunton, Mass.
Cock—See Heath & Son.
Columbus-Union Oil Cloth Co., E. Seventh St. & Big 4 R.R., Columbus, O.
Heath & Son, Edmund F., 225 Warren St., Newark, N. J.
Landers Bros. Co., Dept. A2, Toledo, O. (See page 605.)
Meritas—See Standard Textile Products Co.
Monarch Linoleum & Rug Co., Bulletin Bldg., Philadelphia, Pa.
Monarch Rubber & Oil Cloth Co., Drexel Bldg., Philadelphia, Pa.
O'Bannon Corp., 200 Fifth Ave., New York, N. Y. (See page 253.)
Potter Sons & Co., Thomas, Second St. & Erie Ave., Philadelphia, Pa.
Scherer & Co., H., 440 E. Jefferson Ave., Detroit, Mich.
Standard Textile Products Co., 320 Broadway, New York, N. Y. "Meritas."

CLOTH, LEATHER—See Leather, Artificial

CLOTH, Mohair

Autlux—See Midland Fabrics Co.
Barrell Co. of New York, Wm. L., New York, N. Y. "Wilbaco." (See page 561.)
Bradford Fabrics Co., 1753-55 Broadway, New York, N. Y. (See page 675.)
Bridgeport Coach Lace Co., Bridgeport, Conn. (See page 167.)
Bull Dog—See Mutty Co.
Carr Co., F. S., 31 Beach St., Boston, Mass. "Neverleek."
Chase & Co., L. C., Boston, Mass. "Wexford." (See page 997.)
Haartz, J. C., 10 High St., Boston, Mass.
Kantleak—See Scherer & Co.
Laidlaw Co., 16 W. 60th St., New York, N. Y. "Limotex." (See pages 253 and 617.)
Landers Bros. Co., Dept. A2, Toledo, O. (See page 605.)
Limotex—See Laidlaw Co.
Midland Fabrics Co., 228 W. 58th St., New York, N. Y. "Autluk." (See page 935.)
Mutty Co., L. J., 175 Congress St., Boston, Mass. "Bull Dog."
Neverleek—See Carr Co.
Pickens Auto Cloth Co., 239 Fourth Ave., New York, N. Y. (Importers.)
Scherer & Co., H., 440 E. Jefferson Ave., Detroit, Mich. "Kantleak."
Strong Textile Co., 245 W. 55th St., New York, N. Y. "Strongtex." (See page 251.)
Strongtex—See Strong Textile Co.

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NEW YORK

PRODUCTION CLOTHS TO MEET ALL REQUIREMENTS || **QUALITY CLOTHS** FOR QUALITY CARS

TOP AND SLIP COVER MATERIALS—CARPETS, SILKS, PASSEMENTERIES

36", 50" and 54" FORD DRAB AND WHITE BACK RUBBER

Rubber-Coated Fabrics

High-Grade Rubber—Whipcord Bow Drill—Mohair—Roofing Duck

Single and Double Texture for Automobile Tops, Side Curtains, Etc. 36" to 60" Wide

Centrally Located for Middle West Shipments

THE TOLEDO AUTO FABRICS COMPANY
TOLEDO, OHIO

PROPER TIMING MEANS BIGGER REPAIR PROFITS

The only way to get proper returns from your repair work is to know the actual time consumed on each job.

Henry Kastens Time Stamps furnish an accurate record of just how long each job takes—the correct basis for repair charges.

It stops the mistakes, losses and complaints due to inaccurate charges. Also useful for timing the arrival and departure of rented cars, taxis, etc.

Made in several models to meet every requirement.

Write for booklet and prices.

HENRY KASTENS 419½ W. 27th St., New York City

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CLOTH, Mohair (Continued)

Toledo Auto Fabric Co., Toledo, O. (See page 251.)

Weinberg & Co., S., 315 Fourth Ave., New York, N. Y.

Wexford—See Chase & Co.

Wilbaco—See Barrell Co. of New York.

CLOTH, Rubber Coated

Athol Mfg. Co., 505 Fifth Ave., New York, N. Y. (See page 559.)

Boston Woven Hose & Rubber Co., Cambridge, Mass. "Everdry," "Twintite."

Bradford Fabrics Co., 1753-55 Broadway, New York, N. Y. (See page 675.)

Carr Co., F. S., 31 Beach St., Boston, Mass. "Neverleek."

Chase & Co., L. C., Boston, Mass. "Drednaut." (See page 997.)

Cock—See Heath & Son.

Cooks Linoleum Co., E. State St., Trenton, N. J.

Drednaut—See Chase & Co.

du Pont de Nemours & Co. (Fabrikoid Div.) Wilmington, Del. "Fairfield," "Pontop," "Luxar."

Edelstone Fabric Co., Wm. W., 25 Thorndike St., Cambridge, Mass. (Dealers.) (See page 563.)

Empire Rubber & Tire Co., Mulberry St. & Clinton Ave., Trenton, N. J.

Everdry—See Boston Woven Hose & Rubber Co.

Fairfield—See Du Pont Fabrikoid Co.

Halotex—See Laidlaw Co.

Heath & Son, Edmund F., 225 Warren St., Newark, N. J. "Cock."

Hodgman Rubber Co., Tuckahoe, N. Y.

Kantleak—See Scherer & Co.

Laidlaw Co., 16 W. 60th St., New York, N. Y. "Onyxcloth," "Halotex," "Storm King," "Neutop," "Rubbertex." (See pages 253 and 617.)

Landers Bros. Co., Dept. A2, Toledo, O. (See page 605.)

Luxar—See Du Pont Fabrikoid Co.

Monarch Rubber & Oil Cloth Co., Drexel Bldg., Philadelphia, Pa.

Mutty Co., L. J., 175 Congress St., Boston, Mass. "Dridek."

Neutop—See Laidlow Co.

Neverleek—See Carr Co

Newark Rubber Co., Schley St., Garfield, N. J.

O'Bannon Corp., 200 Fifth Ave., New York, N. Y. (See page 253.)

Onyxcloth—See Laidlaw Co.

Plymouth Rubber Co., 50 State St., Boston, Mass.

Pontop—See Du Pont Fabrikoid Co.

Rubbertex—See Laidlaw Co.

Scherer & Co., H., 440 E. Jefferson Ave., Detroit, Mich. "Kantleak."

Storm King—See Laidlaw Co.

Strong Textile Co., 245 W. 55th St., New York, N. Y. "Strongtex." (See page 251.)

Strongtex—See Strong Textile Co.

Toledo Auto Fabrics Co., Toledo, O. (See page 251.)

Twintite—See Boston Woven Hose & Rubber Co.

United States Rubber Co., 1790 Broadway, N. Y.

Vulcan Proofing Co., 58th St. & First Ave., Brooklyn, N. Y.

CLOTH, STRAINER—See Cloth, Wire

CLOTH TRIMMINGS — See Trimmings, Cloth and Carpet

CLOTH, UPHOLSTERY — See Cloth, Mohair; also Cloth, Enamel; also Cloth, Rubber; also Broadcloth; also Silk; also Whipcord

CLOTH, Wire

(For use in Strainers, Horn Screens, etc.)

Buffalo Wire Works Co., 431 Terrace, Buffalo, N. Y.

Cleveland Wire Cloth & Mfg. Co., 3573-81 E. 78th St., Cleveland, O.

De Witt Wire Cloth Co., 291 Broadway, New York, N. Y.

Howard & Morse, 45 Fulton St., New York, N. Y. "National."

Michigan Wire Cloth Co., 2100 Howard St., Detroit, Mich.

Multi-Metal Co., 251 W. 19th St., New York, N. Y.

National—See Howard & Morse.

Newark Wire Cloth Co., 224 Verona Ave., Newark, N. J.

New Jersey Wire Cloth Co., 612 S. Broad St., Trenton, N. J.

Tyler Co., W. S., Superior Ave. & E. 36th St., Cleveland, O.

CLOTHES LOCKERS—See Lockers, Metal Clothes

CLOTHING, Aviators

(See also Helmets; also Gloves and Mittens)

Abercrombie & Fitch Co., Madison Ave. & 45th St., New York, N. Y.

Dreadnaught Safety Suit Co., 1253 Broadway, New York, N. Y.

International Coat Co., 114-16 Fifth Ave., New York, N. Y.

Loewenberg Co., 58-62 Colden St., Newark, N. J.

Milwaukee Tanning & Clothing Co., Hanover & Florida Sts., Milwaukee, Wis.

Sims, Alfred Varley, 2 Rector St., New York, N. Y.

Spalding & Bros., A. G., 126 Nassau St., New York, N. Y.

Strauss & Buegeleisen, 16 Hanover Pl., Brooklyn, N. Y.

Taylor Co., Alex., 26 E. 42d St., New York, N. Y.

Tower Co., A. J., 24 Simmons St., Boston, Mass.

CLOTHING, Electrically Heated, Aviators

Simplex Electric Heating Co., 35 Sidney St., Cambridge, Mass.

CLOTHING, Motorists

(See also Caps; also Gloves; also Leggings; also Mufflers)

Accurate Cover Co., 373 Canal St., New York, N. Y. "Rubbertex," "Slipovers."

All-Over—See Ohio Overall Co.

Armi-Khaki—See Freneau-Sweeny Co.

Auto-Shirt Co., Midland, Md.

Automobile Apparel Co., Bush Ave., Port Chester, N. Y.

Ballard & Co., J. O., Malone, N. Y.

Beardsley & Haft Co., Columbus, O. "Slipovers." (See page 255.)

Beats All—See Standard Oiled Clothing Co.

Beaver Dam Overall Mfg. Co., 112 Rowell St., Beaver Dam, Wis.

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Laidlaw Motor Car Fabrics

WHENEVER the questions of true value and excellence of fabric arise, **Laidlaw Closed Car Upholstery Cloths, Carpets, Curtain Silks** and **Passementeries** will supply the answer.

THE LAIDLAW COMPANY, Inc.

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Chicago **Cleveland** **Detroit** **St. Louis**

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O'BANNON COATED FABRICS

Trade Mark Reg. U. S. Pat. Off.

Write for Samples

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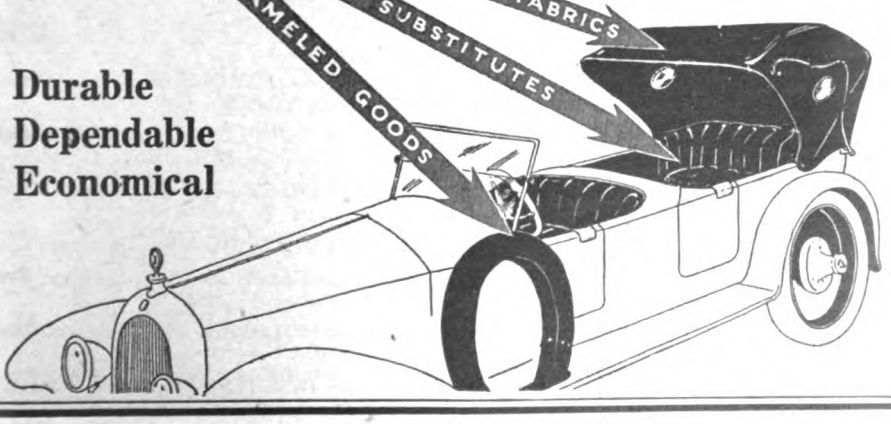
RUBBERIZED TOP FABRICS

LEATHER SUBSTITUTES

ENAMELED GOODS

Durable
Dependable
Economical



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CLOTHING, Motorists (Continued)

Bishop Co., J. H., Wyandotte, Mich.

Blauvelt Knitting Co., 330-34 Plane St., Newark, N. J.

Boynton's Improved Process Oil Clothing Co., Vincent St., Gloucester, Mass.

Bradley Knitting Co., Delavan, Wis.

Burlington Blanket Co., 711 Oregin St., Burlington, Wis.

Camden—See Goodrich Co.

Charat Co., 140 W. 34th St., New York, N. Y.

Chippewa Falls Woolen Mill, Chippewa Falls, Wis.

Comfort Auto Robe Co., Waterloo, N. Y.

Coveralls—See Utility Garment Co.

Crosby-Frisian Fur Co., 571 Lyell Ave., Rochester, N. Y.

Dodge, H. C., 452 Fifth Ave., New York, N. Y.

Elco—See Loewenberg Co.

Ellsworth & Thayer Mfg. Co., 336-40 Broadway, Milwaukee, Wis. "Great Western."

Everdri—See Loewenberg Co.

Everett Mfg. Co., Everett, Mass. "Everite."

Everite—See Everett Mfg. Co.

Favorite Knitting Mills, 1388 W. Sixth St., Cleveland, O.

Finck & Co., W. M., 3683 Gratiot Ave., Detroit, Mich.

Fitzwell—See Niagara Fabric Mfg. Co.

Freneau-Sweeny Co., 392 Fifth Ave., New York, N. Y. "Armi-Khaki."

Goodrich Co., B. F., S. Main St., Akron, O. "Camden."

Goodyear Rubber Co., 787 Broadway, New York, N. Y.

Great Western—See Ellsworth & Thayer Mfg. Co.

Guiterman Bros., St. Paul, Minn.

Hall & Co., R. S., Versailles, O.

Hill Mfg. Co., Richard F., 217-19 High St., Newark, N. J. "Kant Leak."

Huchberger & Co., J., 93 Fifth Ave., New York, N. Y.

Improved Mfg. Co., Ashland, O.

International Coat Co., 114-16 Fifth Ave., New York, N. Y.

Jaegers S. W. S. Co., 395 Fourth Ave., New York, N. Y.

Kant Leak—See Hill Mfg. Co.

Kenreign—See Kenyon Co.

Kenyon Co., C., 754 Pacific St., Brooklyn, N. Y. "Kenreign." (See page 760.)

Labor-Alls—See Ward Co.

Lamm Bros., 339-41 N. Gay St., Baltimore, Md

Lee Mercantile Co., H. D., 22d & Gillham Sts. Kansas City, Mo. "Union-Alls."

Loewenberg Co., 58-62 Colden St., Newark, N. J. "Everdri," "Elco."

Longwool—See Wallace Co.

McKibben, Driscoll & Dorsey, Fifth St. & Broadway, St. Paul, Minn.

Manhattan—See Standard Oiled Clothing Co.

Mann Co., Léon, 906 Broadway, New York, N. Y.

Meier & Co., Louis, 1002-10 Central Ave., Indianapolis, Ind.

Michigan Motor Garment Co., Greenville, Mich. "Outerall." (See page 367.)

Milwaukee Tanning & Clothing Co., Hanover & Florida Sts., Milwaukee, Wis.

Moore-Smith Co., 250 Devonshire St., Boston, Mass.

Morawetz Co., 317-25 E. Water St., Milwaukee, Wis.

New Process Co., Warren, Pa.

Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y.

Norman Garment Co., 32 Union Sq., New York, N. Y.

Ohio Garment Co. (Automotive Dept.), Springfield, O. (See page 255.)

Ohio Overall Co., Wooster, O. "All-Over."

Outerall—See Michigan Motor Garment Co.

Oshkosh Overall Co., 33 Otter St., Oshkosh, Wis.

Parker Co., John H., 25 James St., Malden, Mass.

Patrick-Duluth Woolen Mills, Duluth, Minn.

Poledo Coat Co., 25 Thorndike St., Cambridge, Mass.

Pontiac Knitting Co., Pontiac, Mich.

Powers Mfg. Co., Waterloo, Ia. "Suitalls." (See page 593.)

Protexall Co., 500 Pearl St., Abingdon, Ill. (See page 255.)

Reliable Coat Co., 113 Blum St., Union Hill, N. J.

Revillon Freres, 19 W. 34th St., New York, N. Y.

Rosenwald & Weil, 3315 Armitage Ave., Chicago, Ill.

Rubbertex—See Accurate Cover Co.

Russits Fur Co., John, 7 E. 48th St., New York, N. Y.

Sanders Co., 218½ Indiana Ave., Indianapolis, Ind.

Scott & Co., 340 Washington St., Boston, Mass.

Shanhouse & Sons, W., Rockford, Ill.

Slipovers—See Accurate Cover Co.

Slipovers—See Beardsley & Haft Co.

Standard Oiled Clothing Co., 810 E. 152d St., New York, N. Y. "Beats All," "Manhattan."

Suitalls—See Powers Mfg. Co.

Tower Co., A. J., 24 Simmons St., Boston, Mass.

Union-Alls—See Lee Mercantile Co.

Union Overall Co., 201 N. Madison St., Rockford, Ill.

United States Rubber Co., 1790 Broadway, New York, N. Y.

Utility Garment Co., 200 N. Jefferson St., Chicago, Ill. "Coveralls."

Wallace Co., Hugh, 2616-40 E. Grand Blvd., Detroit, Mich. "Longwool."

Ward Co., C. E., 101-05 Williams St., New London, O. "Labor-Alls."

Wisconsin Garment Co., 711 Origen St., Burlington, Wis. "Wisgar Co."

Wisgar Co.—See Wisconsin Garment Co.

CLOTHS, POLISHING—See Wipers

CLOTHS, WIPING—See Wipers

CLUTCH CHECKS—See Checks, Clutch

CLUTCH COMPOUNDS—See Dressing, Clutch

CLUTCH CONTROLS FOR FORDS—See Controls, Clutch

CLUTCH COUPLINGS, MOTOR BOAT—See Couplings, Motor Boat Clutch

CLUTCH DISCS—See Discs, Steel Clutch; also Lining, Brake

CLUTCH DRESSING—See Dressing, Clutch

CLUTCH FACINGS—See Lining, Brake; also Leather, Friction

CLUTCH HOLDERS—See Holders, Clutch, for Fords

CLUTCH INSERTS—See Cork, Brake and Clutch

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The Autoist's Garment

Made exclusively for motorists; easy to slip on—easy to slip off. Comes packed in a neat khaki bag.

Write for descriptive circular and prices.

Beardsley & Haft Co.
COLUMBUS
OHIO

SLIPOVERS
Slips Over No Buttons -- No Hooks
Protects the Motorists Clothes

One Piece Overalls With Many Advantages

Patented spring-back permits freedom of motion. "When you bend Protexall gives."

No straps, no coat to catch. Means safety and convenience.

Protected buttons avoid scratching of car or merchandise.

On top of all this Protexalls can be made to advertise your business with your name stitched right into the back with fast color thread.

A line of inquiry will bring you complete information.

The Protexall Company
500 Pearl Street Abingdon, Ill.

The Uniform of the Automotive Industry

"AUTOMOTIVE" BRAND

Utility Suits

Utility Coats

Designed and built especially for the Automotive Trade

DISTRIBUTION: Exclusively by bona-fide Jobbers of Automotive Equipment.

MATERIALS: A high-count, sulphur-dyed, KHAKI TWILL. Fast colors.

PACKED: Each suit or coat is in a strong, good-looking, properly-labeled box that handles stocks and displays most advantageously. Shipping cartons contain one dozen such packages. Contents and sizes are shown on outside of case.

CATALOG shows complete line and will be mailed to any legitimate Jobber for the asking.

THE OHIO GARMENT CO.
Automotive Dept. Springfield, Ohio

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CLUTCH LININGS—See Lining, Brake; also Leather, Friction

CLUTCH PULLEYS—See Pulleys, Traction Friction Clutch

CLUTCH RELEASERS FOR FORDS—See Releasers, Clutch

CLUTCH SHAFTS—See Shafts, Transmission

CLUTCHES, Automobile Friction

Bierman—See Strite Governor Pulley Co.
Borg & Beck, 920 S. Michigan Ave., Chicago, Ill. (See page 257.)
C. A. S. Engineering Co., 4210 Woodward Ave., Detroit, Mich. (Sole Distributors for Mechanics Machine Co., Rockford, Ill.)
Clarotto Mfg. Co., 1215-19 Fourth St., Milwaukee, Wis.
Cotta Transmission Co., 2340 11th St., Rockford, Ill.
Detlaff Co., A. J., 127 Lafayette Ave., Detroit, Mich. (See page 619.)
Detroit Accessories Corp., Detroit, Mich. (See page 747.)
Fuller & Sons Mfg. Co., Kalamazoo, Mich. Detroit, Mich. (See page 563.)
Hartford Automotive Parts Co., Hartford, Conn. (See pages 764 and 765.)
Hele-Shaw—See Merchant & Evans Co.
Hilliard Clutch & Machinery Co., 102 W. Fourth St., Elmira, N. Y.
Hoosier Auto Parts Co., Muncie, Ind.
Jones Gear Co., 965 Wayside Rd., Cleveland, O.
Lauth Clutch Co., J., 3616 Pine Grove Ave., Chicago, Ill.
List Mfg. Co., E. J., Havana, Ill.
M. & E.—See Merchant & Evans Co.
Mechanics Machine Co.—See C. A. S. Engineering Co.
Merchant & Evans Co., 2035 Washington Ave., Philadelphia, Pa. "Hele-Shaw," "M. & E."
Strite Governor Pulley Co., 301 S. Third St., Minneapolis, Minn. "Bierman."
Warner Gear Co., Muncie, Ind. (See page 457.)

CLUTCHES, Motor Boat Friction

(See also Gears, Motor Boat Reverse)

Joe's—See Snow & Petrelli Mfg. Co.
Johnson Machine Co., Carlyle, 52 Main St., Manchester, Conn.
Snow & Petrelli Mfg. Co., 152 Brewery St., New Haven, Conn. "Joe's."

CLUTCHES, Motorcycle Friction

Eclipse Machine Co., Elmira, N. Y. (See page 525.)

CLUTCHES, Tractor Friction

Bierman—See Strite Governor Pulley Co.
Cotta Gear Co., 117-27 Morgan St., Rockford, Ill.
Hartford Automotive Parts Co., Hartford, Conn. (See pages 764 and 765.)
Hele-Shaw—See Merchant & Evans Co.
Hilliard Clutch & Machinery Co., 102 W. Fourth St., Elmira, N. Y.
Hoosier Auto Parts Co., Muncie, Ind.
Johnson Machine Co., Carlisle, 52 Main St., Manchester, Conn.
Lauth Clutch Co., J., 3616 Pine Grove Ave., Chicago, Ill.
M. & E.—See Merchant & Evans Co.
Medway Sales Corp., Racine, Wis. (Sole Distributor for Toro Motor Co., Minneapolis, Minn. "Stoufer." (See page 377.)
Merchant & Evans Co., 2035 Washington Ave., Philadelphia, Pa. "Hele-Shaw," "M. & E."
Stoufer—See Medway Sales Corp.
Strite Governor Pulley Co., 307 Third St., S., Minneapolis, Minn. "Bierman."
Toro Motor Co.—See Medway Sales Corp.
Twin Disc Clutch Co., Racine, Wis. (See page 925.)

COACH LACE—See Lace, Coach

COACH SCREWS—See Screws, Coach

COAT RAIL BAGS—See Bags, Coat Rail

COAT RAILS—See Rails, Robe or Coat

COATINGS, Airplane Wing

(See also Varnish; also Paints, Fireproofing)

American Chemical & Mfg. Co., 617 Monticello Ave., Norfolk, Va. "Hippo."
Celstrom—See Chemical Products Co.
Chemical Products Co., 30 Charles River Rd., Cambridge, Mass. "Celstrom."
Ferdinand & Co., L. W., 152 Kneeland St., Boston, Mass.
Flexible Compound Co., 3607 Haverford Ave., Philadelphia, Pa.
Hercules Powder Co., 120 Broadway, New York, N. Y.
Hippo—See American Chemical & Mfg. Co.
National Aeroplane Co., 549 W. Washington St., Chicago, Ill.
Nikolas & Co., G. J., 1227-29 W. Van Buren St., Chicago, Ill.
Phenix Aircraft Products Co., Williamsville, N. Y.
Titanine, 2 Rector St., New York, N. Y.
Valentine & Co., 456 Fourth Ave., New York, N. Y. "Valspar."
Valspar—See Valentine & Co.
Van Schaack Bros. Chemical Works, 3858 Avondale Ave., Chicago, Ill. "Vanite."
Vanite—See Van Schaack Bros. Chemical Works.

COCK CONTROL RODS FOR FORDS—See Rods, Gasoline Cock Control; also Wrenches, Oil Cock

COCK WRENCHES FOR FORDS—See Wrenches, Oil Cock

COCKS, DRAIN—See Cocks, Spring Key; also Cocks, Standard Pet

COCKS, FUEL SUPPLY AND RESERVE—See Valves, Two Way Tank

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COCKS, Fuel Supply and Reserve, for Fords

(Two way cock to be attached to gasoline tank to ensure a reserve supply of fuel for emergency)

Apco Mfg. Co., Providence, R. I.
Arlington Mfg. Co., Mariners Harbor, N. Y. "Save-A-Walk."
Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O.
Save-A-Walk—See Arlington Mfg. Co.
T-R—See Tolman-Reeve Engineering Corp.
Tolman-Reeve Engineering Corp., 3104 Michigan Ave., Chicago, Ill. "T-R."
Stevens & Co., 375 Broadway, New York, N. Y. (See page 1147.)

COCKS, GASOLINE—See Cocks, Spring Key; also Cocks, Standard Pet

COCKS, PRIMING—See Cups, Priming

COCKS, RESERVE—See Valves, Two Way Tank

COCKS, RESERVE, FOR FORDS—See Cocks, Fuel Supply

COCKS, Spring Key

Acme Brass Works, 8211 Collins Ave., Detroit, Mich.
Amalgamated Brass Co., Blanchester, O.
American Brass & Iron Co., Detroit, Mich. (See page 205.)
Brass Products Co., 3661-73 Palmer Ave., E., Detroit, Mich.
Buckeye Iron & Brass Works, 324 E. Third St., Dayton, O.
Detroit Brass & Malleable Works, Holden & Greenwood Aves., Detroit, Mich.
Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.
Hancock Mfg. Co., 802 E. Henry St., Charlotte, Mich.
Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)
Kant-Leak—See Michigan Lubricator Co.
Lincoln Brass Works, Detroit, Mich. (See page 259.)
Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O.
National Brass Mfg. Co., 191-93 Mill St., Rochester, N. Y.
Michigan Lubricator Co., Detroit, Mich. (See page 259.)
Powell Co., Wm., 2525 Spring Grove Ave., Cincinnati, O.
Roberts Brass Mfg. Co., 5401 W. Fort St., Detroit, Mich.
Standard Brass Works, 2931 Wight St., Detroit, Mich.

COCKS, Standard Pet

Acorn Brass Mfg. Co., 51 N. Peoria St., Chicago, Ill.
American Brass & Iron Co., Detroit, Mich. (See page 205.)
American Lubricator Co., Summit Ave. & Wabash Ry., Detroit, Mich.
Belfield Co., H., 435 N. Broad St., Philadelphia, Pa.
Belknap Mfg. Co., Bridgeport, Conn.
Brass Products Co., 3661-73 Palmer Ave., E., Detroit, Mich.
Britton—See Frasse & Co.
Buckeye Iron & Brass Works, 324 E. Third St., Dayton, O.
Commonwealth Brass Corp., Detroit, Mich. (See page 1139.)
Crane Co., 519 S. Canal St., Chicago, Ill.
Detroit Lubricator Co., 5842-5986 Trumbull Ave., Detroit, Mich.
Detroit Brass & Malleable Works, Holden & Greenwood Aves., Detroit, Mich.
Dole Valve Co., 1923 Carroll Ave., Chicago, Ill.
Eagle Brass Works, Dubois & Franklin Sts., Detroit, Mich.
Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.
Frasse & Co., Peter A., 417-21 Canal St., New York, N. Y. "Britton." (See page 279.)
Haydenville Co., Haydenville, Mass.
Homer Brass Works, 231 Race St., Philadelphia, Pa.
Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)
Jarecki Mfg. Co., Erie, Pa.
Kant-Leak—See Michigan Lubricator Co.
Kelly & Jones Co., Greensburg, Pa.
Lincoln Brass Works, Detroit, Mich. (See page 259.)
Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O.
McNab & Harlin Mfg. Co., 56 John St., New York, N. Y.
McRae & Roberts Co., 100-16 S. Campbell Ave., Detroit, Mich.
Michigan Lubricator Co., Detroit, Mich. "Kant-Leak." (See page 259.)
Morgan Mfg. Co., Court St., Keene, N. H. (See page 751.)
National Brass Mfg. Co., 191-93 Mill St., Rochester, N. Y.
Nolte Brass Co., Springfield, O.
Powell Co., Wm., 2525 Spring Grove Ave., Cincinnati, O.
Regester's Sons Co., J., Holliday & Saratoga Sts., Baltimore, Md.
Roberts Brass Mfg. Co., 5401 W. Fort St., Detroit, Mich.
Schaeffer & Budenberg Mfg. Co., Brooklyn, N. Y.
Standard Brass Works, 2931 Wight St., Detroit, Mich.
Sterling & Skinner Mfg. Co., 2672 E. Grand Blvd., Detroit, Mich.
Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

COCOA MATS—See Mats, Cocoa

COIL BOX PROTECTORS FOR FORDS—See Protectors, Coil Box

COIL BOXES—See Boxes, Spark Coil

COIL LOCKS FOR FORDS—See Locks, Switch and Coil

COIL PARTS—See Parts, Magneto, Coil and Distributor

COIL SPRINGS—See Springs, Machinery

COIL TESTERS—See Testers, Coil

COIL WINDINGS—See Windings, Starter and Ignition

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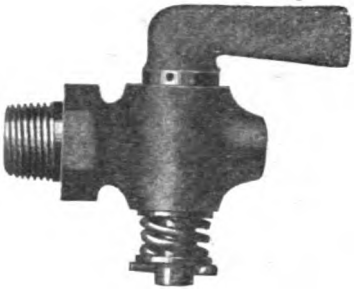

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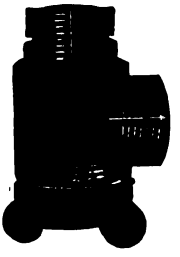

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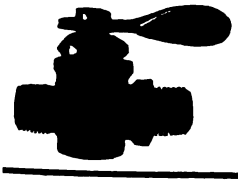
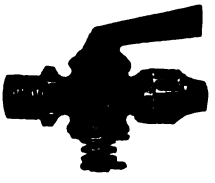

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COILS, Motor Boat Spark

Connecticut Telephone & Electric Co., Meriden, Conn.
Detroit Coil Co., 439 Fort St., E., Detroit, Mich.
Lemke Electric Co., 509-13 Cedar St., Milwaukee, Wis.
National Coil Co., 221 N. Cedar St., Lansing, Mich.
Splitdorf Electrical Co., 98 Warren St., Newark, N. J.

COILS, Motorcycle Spark

Lemke Electric Co., 509-13 Cedar St., Milwaukee, Wis.
Splitdorf Electrical Co., 98 Warren St., Newark, N. J.

COILS, Spark

(See also Systems, Battery Ignition)

American Bosch Magneto Corp. (Brightwood), Springfield, Mass. "Bosch."
American Coil Co., Foxboro, Mass.
Berkshire—See Pittsfield Spark Coil Co.
Bosch—See American Bosch Magneto Corp.
Brown & Caine, 2112 Michigan Ave., Chicago, Ill. (See page 625.)
Connecticut Telephone & Electric Co., Meriden, Conn.
Fansteel Products Co., North Chicago, Ill. (See page 1029.)
Gray-Heath Co., 1440 S. Michigan Ave., Chicago, Ill. "Sturdy." (See page 741.)
Heco—See Heinze Electric Co.
Heinze Electric Co., Lawrence St., Lowell, Mass. "Heco."
J & B Mfg. Co., Pittsfield, Mass. (See page 739.)
Jefferson Electric Co., 426-30 S. Green St., Chicago, Ill.
Jewell—See Pittsfield Spark Coil Co.
K-W Ignition Co., 2900 Chester Ave., Cleveland, O. (See page 621.)
Kingston—See Kokomo Electric Co.
Kokomo Electric Co., 1450 N. Webster St., Kokomo, Ind. "Kingston."
Manhattan Electrical Supply Co., 17 Park Pl., New York, N. Y. "Mesco."
Mesco—See Manhattan Electrical Supply Co.
Micatite—See Pittsfield Spark Coil Co.
Millwood-Brackett Co., 1601 Locust St., Des Moines, Ia. (See page 1151.)
National Coil Co., 221 N. Cedar St., Lansing, Mich.
New York Coil Co., 338-40 Pearl St., New York. N. Y.
Pittsfield Spark Coil Co., Pittsfield, Mass. "Jewell," "Berkshire," "Micatite."
Quick Action Ignition Co., South Bend, Ind.
Spencer Metal Products Co., Spencer, O. (See page 766.)
Splitdorf Electrical Co., 98 Warren St., Newark, N. J.
Sturdy—See Gray-Heath Co.
Wells Mfg. Co., R. C., 114 S. Brooke St., Fond du Lac, Wis.
Williams, E. Q., 535-39 S. Clinton St., Syracuse, N. Y.

COILS, Spark, for Fords

(See also Vibrators, Master)

Heco—See Heinze Electric Co.
Heinze Electric Co., Lawrence St., Lowell, Mass. "Heco."

COLD CHISELS—See Chisels, Cold and Cape

COLD ROLLED STEEL—See Steel, Cold Rolled

COLD ROLLED STRIP STEEL—See Steel, Cold Rolled Strip

COLD SAWS—See Saws, Cold

COLLAPSIBLE BUCKETS—See Buckets, Collapsible

COLLAPSIBLE PAILS—See Buckets, Collapsible

COLLAPSIBLE SPADES—See Spades and Shovels, Collapsible

COLORS, COACH—See Paints and Colors

COLUMN BRACES FOR FORDS—See Braces, Steering Column

COLUMNS, Water and Boiler Alarms

Reliance Gauge Column Co., 45 E. Prospect St., Cleveland, O.

COMMUTATORS, Electric Motor

Cameron Electrical Mfg. Co., 205 Main St., Ansonia, Conn.
Columbia Machine Works & Malleable Iron Co., Chestnut St. & Atlantic Ave., Brooklyn, N. Y.
Electric Materials Co., North East, Pa.
Eureka Co., North East, Pa.
Homer Commutator Co., 4748 Hough Ave., N. E., Cleveland, O.
Toledo Standard Commutator Co., Toledo, O. (See page 1189.)

COMMUTATORS, SPARK—See Timers, Ignition

COMPASSES, Aircraft

Creagh-Osborne—See Sperry Gyroscope Co.
Pentz, Van Alen & Durkee Compass Co., 4 W. 37th St., New York, N. Y.
Pioneer Instrument Co., 246 Greenwich St., New York, N. Y.
Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) (See page 301.)
Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y. "Creagh-Osborne."

COMPASSES, Motorists' Pocket

(For carrying when touring)

Ceebynite—See Taylor Instrument Cos.
Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.
Taylor Instrument Companies, Rochester, N. Y. "Ceebynite."

COMPENSATING GEARS—See Gears, Differential

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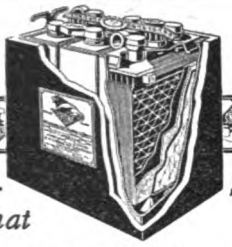

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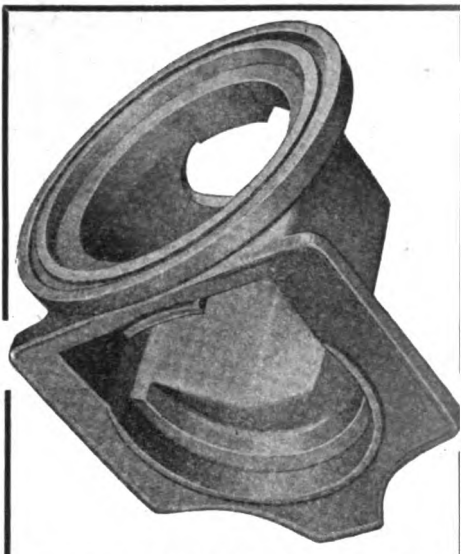

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COMPOSITION CASTINGS—See Castings, Bronze and Brass

COMPOSITION CONTROL LEVER BALLS—See Balls, Composition Control Lever

COMPOSITION GASKETS—See Packing

COMPOSITION, Insulating

(Substitute for Hard Rubber)

American Insulator Corp., New Freedom, Pa. (See page 913.)

Bakelite—See Boonton Rubber Mfg. Co.

Bakelite—See Evilo Molding Co.

Bakelite—See General Bakelite Co.

Bakelite—See Insulation Products Co.

Bakelite-Dilecto—See Continental Fibre Co.

Bakelite Micarta—See Westinghouse Electric & Mfg. Co.

Belden Mfg. Co., 2300 South Western Ave., Chicago, Ill. (See page 1171.)

Boonton Rubber Mfg. Co., Boonton, N. J. "Bakelite."

Condensite—See Duranoid Mfg. Co.

Condensite Co. of America, Grove St., Bloomfield, N. J.

Continental Fibre Co., Newark, Del. "Bakelite-Dilecto." (See page 263.)

Cutler Hammer Mfg. Co., 390 St. Paul Ave., Milwaukee, Wis. "Thermoplax," "Pyroplax."

Dane Molding Co., 335-41 Sixth Ave., Newark, N. J.

Dayton Insulating Die Co., Dayton, O.

Duranoid Mfg. Co., 213-21 Chestnut St., Newark, N. J. "Condensite."

Electrose Mfg. Co., 70 Washington St., Brooklyn, N. Y.

Evilo Molding Co., Westfield, N. J. "Bakelite."

Garfield Mfg. Co., Garfield, N. J. "Gummon." "Tegit." "Hemit."

General Bakelite Co., 2 Rector St., New York, N. Y. "Bakelite." (See page 263.)

General Ignition Products Co., 562 Atlantic Ave., Brooklyn, N. Y.

General Insulate Co., 1008 Atlantic Ave., Brooklyn, N. Y. "Hi-Heet," "Redmanol."

Gummon—See Garfield Mfg. Co.

Hemit—See Garfield Mfg. Co.

Hi-Heet—See General Insulate Co.

Insulation Products Co., Richland St. & Annon Way, Pittsburgh, Pa. "Bakelite."

International Insulating Corp., ft. Mechanic St., Springfield, Mass.

J. P. Bakelite—See Johns-Manville Co.

Johns-Manville Co., H. W., Madison Ave. & 41st St., New York, N. Y. (Sole Distributors for Johns-Pratt Co., Hartford, Conn. "Noark," "J. P. Bakelite," "Vulcabeston.")

Johns-Pratt Co.—See Johns-Manville Co.

Niagara Insul-Bake Specialty Co., 483-93 Delaware Ave., Albany, N. Y.

Noark—See Johns-Manville Co.

Redmanol—See General Insulate Co

Shaw Insulator Co., 5-7 Kirk Pl., Newark, N. J.

Specialty Insul. Mfg. Co., Center St. & R.R. Ave., Hoosick Falls, N. Y.

Tegit—See Garfield Mfg. Co.

Vulcabeston—See Johns-Manville Co.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. "Bakelite Micarta."

COMPOUNDS, Anti-Freezing

(See also Alcohol, Denatured)

Ad-el-ite—See Adams & Elting Co.

Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite." (See page 267.)

Alc-O-Rene—See Hall-Thompson Co.

Alcemo Mfg. Co., 120 Bridge St., Newark, N. J. "Alcola." (See page 247.)

Alcola—See Alcemo Mfg. Co.

Alcoleen Co., 1677-79 Main St., Buffalo, N. Y.

All-In-One—See Scientific Mfg. Co.

Auto Remedy Co., Evans St., Cincinnati, O "Magic."

Benoit, Constant A., Brooklyn, N. Y "Non-Freez-Ene." (See page 225.)

Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.

Columbus Varnish Co., Columbus, O. "Peerless." (See page 365.)

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."

Freeze-Not—See G. & F. Products Co.

Freeze-Proof—See Johnson & Son.

Frezalene Mfg. Co., 32-40 S. Clinton St., Chicago, Ill.

G. & F. Products Co., 1314 12th St., Rock Island, Ill. "Freeze-Not."

Hall-Thompson Co., Dept. A., Hartford, Conn. "Alc-O-Rene." (See page 227.)

Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whiz."

Imperial Oil Co., Merchants Exchange, St. Louis, Mo. "Marvin."

Jewel—See Wadsworth-Howland Co.

Johnson & Son, S. C., 1012 16th St., Racine Wis. "Freeze-Proof."

K-K-K—See Killen Kemical Ko.

Kant Freeze—See Wapakoneta Mfg. Co.

Killen Kemical Ko., Lansing, Mich. "K. K. K." (See page 263.)

Liberty Chemical Works, 352 E. Illinois St., Chicago, Ill.

Magic—See Auto Remedy Co.

Magie Bros., 110-12 S. Clinton St., Chicago, Ill.

Martin-Senour Co., 2510 Quarry St., Chicago, Ill.

Marvin—See Imperial Oil Co.

Mirrolike Mfg. Co., 203 Eighth St., Long Island City, N. Y.

Mormiles Co., 416 Sherman St., Chicago, Ill.

No-Freeze—See Sterns & White Co.

Non-Freez-Ene—See Benoit. Constant A.

Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco Twelve-Twenty." (See page 277.)

Norwesco Twelve-Twenty—See Northwestern Chemical Co.

Nulomoline Co., 111 Wall St., New York, N. Y.

Panvar Co., Bulletin Bldg., Philadelphia, Pa. "Se-Ro-eZ."

Peerless—See Columbus Varnish Co.

Perma-Loc Mfg. Co., Wilkes-Barre, Pa. (See page 695.)

Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.

Rie-Nie—See Durkee-Atwood Co.

Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. (See pages 129, 151, 325 and 327.)

Scientific Mfg. Co., 426 Prescott Ave., Scranton, Pa. "All-In-One."

Se-Ro-eZ—See Panvar Co

Stearns & White Co., 359 N. Franklin St., Chicago, Ill. "No-Freeze."

Sterno Corp., New York, N. Y. (See page 1147.)

Tankil Chemical Sales Co., 224 High St., Cleveland, O.

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COMPOUNDS, Anti-Freezing (Continued)

Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."

Wapakoneta Mfg. Co., Wapakoneta, O. "Kant Freeze."

Whiz—See Hollingshead Co.

Xylo Mfg. Co., Uniontown, Pa. (See page 227.)

COMPOUNDS, Bearing Grinding

Kwik-Ak-Shun—See United States Products Co.

M. T. K. Products Co.—See M. T. K. Sales Corp.

M. T. K. Sales Corp., 296 Andrews St., Rochester, N. Y. (Sole Distributors for M. T. K. Products Co., Seattle, Wash. "Timesaver." (See page 265.)

Renrew Products Co., 370 West 51st St., New York. "100 Per Cent." (See page 1219.)

Timesaver—See M. T. K. Sales Corp.

United States Products Co., Highland Bldg., Pittsburgh, Pa. "Kwik-Ak-Shun." (See page 1105.)

COMPOUNDS, BRAKE — See Dressing, Brake

COMPOUNDS, Brazing

A. & J. Mfg. Co., 559 W. Lake St., Chicago, Ill. "Braziron."

Acme—See Universal Fluxine Co.

Anti-Borax Compounds Co., 1502 Wall St., Fort Wayne, Ind. "Crescent."

Banner—See Cortland Specialty Co.

Braziron—See A. & J. Mfg. Co.

Cortland Specialty Co., 174-78 Railroad St., Cortland, N. Y. "Banner."

Cortland Welding Compound Co., Cortland, N. Y. "Star."

Crescent—See Anti-Borax Compounds Co.

Dixon Crucible Co., Joseph, Jersey City, N. J. (See page 469.)

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."

Ever Right—See Fry, Keyser.

Fluxine—See Krembs & Co.

Fry, Keyser, 616-22 N. Eighth St., Reading, Pa. "Ever Right."

Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker." (See page 227.)

Kast-I-On—See Taber, Arthur L.

Krembs & Co., 173 N. Green St., Chicago, Ill. "Fluxine."

National Rubber & Specialties Co., 4433-39 Chickering Ave., Cincinnati, O. "Red Cross."

P. W. Mfg. Co., Philadelphia, Pa.

Peters, Inc., Widener Bldg., Philadelphia, Pa. "Nicro." (See page 753.)

Phillips-Lafitte Co., Pennsylvania Bldg., Philadelphia, Pa.

Red Cross—See National Rubber & Specialties Co.

Rie-Nie—See Durkee-Atwood Co.

Schneider, Emil, 298-306 South St., Newark, N. J.

Standard Brazing Co., 45 Bromfield St., Boston, Mass. "Tichon."

Standard Mfg. Co., 318 S. Canal St., Chicago, Ill. "Superior."

Star—See Cortland Welding Compound Co.

Superior—See Standard Mfg. Co.

Tabor, Arthur L., 218 E. Sixth St., Corona, Cal. "Kast-I-On."

Tichon—See Standard Brazing Co.

Transco—See Transmuted Metals Co.

Transmuted Metals Co., 3334 Chicago Ave., Chicago, Ill. "Transco."

Tubular Products Co., 53 Railroad Ave., Southington, Conn.

Universal Fluxine Co., 604 S. Main St., Urbana, O. "Acme."

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Wonder Worker—See Hall-Thompson Co.

COMPOUNDS, Buffing and Polishing

Bennett-O'Connell Co., 3600 S. Morgan St., Chicago, Ill. "Mascot," "Excel-All."

Dixon, Wm., 39 John St., New York, N. Y.

Excel-All—See Bennett-O'Connell Co.

Mascot—See Bennett-O'Connell Co.

Munning & Co., A. P., Matawan, N. J.

Stevens, Frederic B., Third & Larned Sts., Detroit, Mich. "White Rose," "White Columbia."

White Columbia—See Stevens, Frederic B.

White Rose—See Stevens, Frederic B.

COMPOUNDS, Carbon Removing

(See also Removers, Carbon; also Machines, Motor Decarbonizing; also Moisteners, Air or Mixture)

Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite." (See page 267.)

Ad-el-ite—See Adams & Elting Co.

All-In-One—See Scientific Mfg. Co.

American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O.

Auto Products Mfg. Co., Buffalo, N. Y. "Kleen-R-Plug." (See page 225.)

Ball Carbon Remover Co., 3416 Baring St., Indianapolis, Ind.

Ball Products Co., 226 Fifth St., Detroit, Mich.

Be-Be-Co.—See Boston Blacking Co.

Bear Cat Products Co., Capitol Hill Sta., Oklahoma City, Okla.

Benoit, Constant A., Brooklyn, N. Y. "Permatex Carbo-Klean." (See page 225.)

Black Diamond—See Hanley & Howitz.

Black Panther Corp., 2406 S. Robinson St., Oklahoma City, Okla.

Blood & Co., T. L., 413 Wacouta St., St. Paul, Minn.

Blozout—See Wallace Mfg. Co.

Blue Ribbon—See International Metal Polish Co.

Boston Blacking Co., Third & Potter Sts., Cambridge, Mass. "Be-Be-Co."

Bowes Co., Robert M., 124-26 E. Ohio St., Indianapolis, Ind. "Seal-Fast."

Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.

Buffalo Specialty Co., Buffalo, N. Y. "Never-Knock." (See page 225.)

Burnox Co., 6324 Greenfield Ave. (W. Allis), Milwaukee, Wis.

"C-P" Chemical Co., 326 River St., Chicago, Ill. "Carbon-X."

Car-Bo-Deen Mfg. Co., 929 Chestnut St., St. Louis, Mo.

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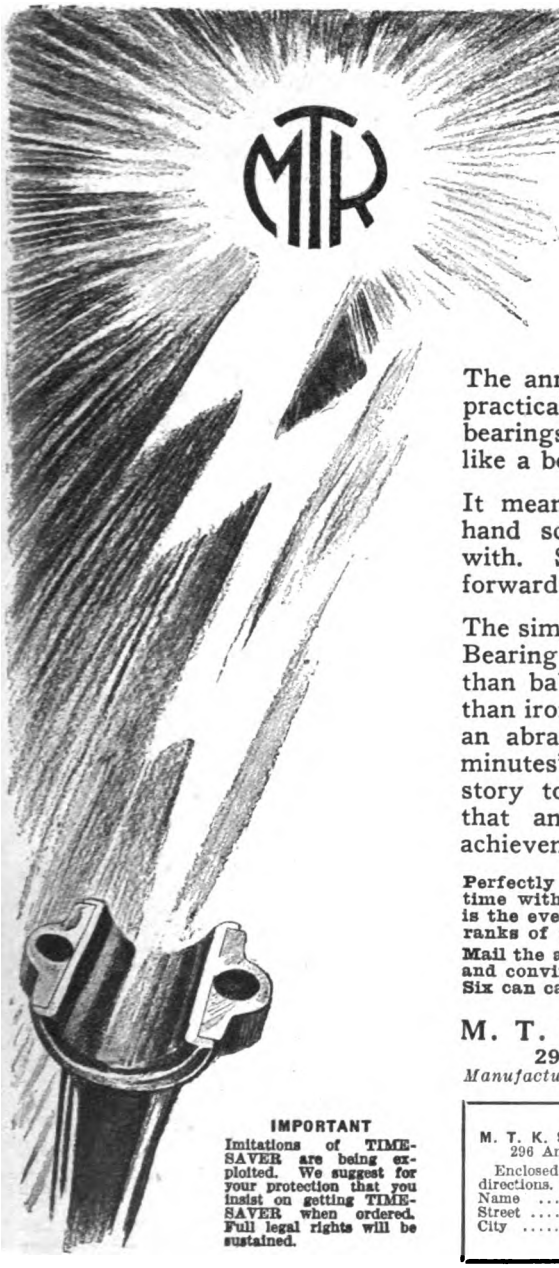

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COMPOUNDS, Carbon Removing (Continued)

Carbocide—See Van Cleef Bros.

Carbolax—See Lindsay, McMillan Co.

Carbolide Chemical Co., Monrovia, Md.

Carbon-X—See "C-P" Chemical Co.

Carbon Cleaning Compound Co., 901 N. Euclid Ave., St. Louis, Mo. "Four Sees."

Carbonox—See Northwestern Chemical Co.

Carbonsolve—See Rust-Off Mfg. Co.

Chalmers Chemical Co., 115 Chestnut St., Newark, N. J. "Phenoid."

Chemical Specialties Co., 327 S. W. Blvd., Kansas City, Mo. "Wallins."

Columbus Varnish Co., Columbus, O. "Peerless." (See page 305.)

Cook, Geo. E., 2322 Broadway, New York, N. Y.

Corasco—See Manifold Heater Co.

Crystal Oil & Paint Co., 6500 Detroit Ave., Cleveland, O.

Denegre Baked Enamel Remover Co., 1922-24 Ave. F, Birmingham, Ala.

Detroit Carbon-Killer Oil Co., Smith Bldg., Detroit, Mich.

Detroit White Lead Works, 1960 Milwaukee Ave., E., Detroit, Mich.

Diamond—See Nu-Back Mfg. Co.

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."

Elgin Motor Power Mfg. Co., 416 Third Ave., Cedar Rapids, Iowa. "Torpedo."

Evans Mfg. Co., 620-22 E. 63d St., Chicago, Ill.

Expello—See Teeaness Products Co.

Famco—See Mears Chemical Co.

Fearless Sales Co., 307 14th St., Denver, Colo.

Fiebing Chemical Co., 238-40 Reed St., Milwaukee, Wis. "Victor."

Four Sees—See Carbon Cleaning Compound Co.

Franklin Distributing Co., 148 Elmwood Ave., Buffalo, N. Y.

French Compression Fluids Co., Pasadena, Cal.

Hall-Thompson Co., Dept. A, Hartford, Conn. "Magic," "Wonder Worker." (See page 227.)

Hanley & Howitz, 1525 W. Indiana Ave. (No. Phila.), Philadelphia, Pa. "Black Diamond."

Hart-Bell Co., 1926 Broadway, New York, N. Y.

International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."

Interstate Mfg. Co., Wollaston, Mass. "M. H. B."

Jewel—See Wadsworth-Howland Co.

Johnson & Son, S. C., 1012 16th St., Racine, Wis.

K-K-K—See Killen Kemical Co.

Karbon Killer—See Ohio Grease Co.

Karbon Klene Co., 227 S. Front St., Philadelphia, Pa.

Killen Kemical Ko., Lansing, Mich. "K. K. K." (See page 263.)

Kimo Mfg. Co., 2625 Main St., Buffalo, N. Y.

Kleen-R-Plug—See Auto Products Mfg. Co.

Koppax—See Koppers Products Co.

Koppers Products Co., 356 Union Arcade, Pittsburgh, Pa. "Koppax."

Kosmas-Art Co., 120 E. Sixth St., Cincinnati, O. "Lightning."

Kwik-Ak-Shun—See United States Products Co.

Liberty Chemical Works, 352 E. Illinois St., Chicago, Ill.

Lightning—See Kosmas-Art Co.

Lindsay, McMillan Co., 242 Broadway, Milwaukee, Wis. "Carbolax."

M. H B.—See Interstate Mfg. Co.

McDougall-Butler Co., 6 Evans St., Buffalo, N. Y.

Magic—See Hall-Thompson Co.

Manifold Heater Co., 30 Main St., Cortland, N. Y. "Corasco."

Mansfield Mfg. Corp., 322 S. Clinton St., Syracuse, N. Y.

Martin-Senour Co., 2510 Quarry St., Chicago, Ill.

Mears Chemical Co., Frank A., 63 Biltmore Ave., Asheville, N. C. "Famco."

Milwaukee Auto Specialty Mfg. Co., 705-15 Chestnut St., Milwaukee, Wis. "Radium."

Mirrolike Mfg. Co., 203 Eighth St., Long Island City, N. Y.

Monox—See Monoxide Co. of America.

Monoxide Co. of America, 1367 Gratiet Ave., Detroit, Mich. "Monox." (See page 267.)

Motor Kleen Co., 647 Third Ave., New York, N. Y.

Munger Products Co., 220 Fifth Ave., New York, N. Y. "Wundr."

Nacto Cleaner Corp., 2171-73 Madison Ave., New York, N. Y.

Nation Co., 332 W. 16th St., Los Angeles, Cal. (See page 1141.)

Never-Knock—See Buffalo Specialty Co.

Nitro—See Nitroline Products Co.

Nitroline Products Co., 245 W. 55th St., New York, N. Y. "Nitro."

Nobrac Co., 1777 Broadway, New York, N. Y.

Northwestern Chemical Co., 785 State St., Marietta, O. "Carbonox." (See page 277.)

Nu-Back Mfg. Co., 213-15 S. Second St., St. Louis, Mo. "Diamond."

Ohio Grease Co., Box 21, Loudonville, O. "Karbon-Killer." (See page 267.)

Opco—See World Oil Products Co.

Organic Products Corp., 301 Liberty St., Schenectady, N. Y.

Orient Chemical Co., Gumbel Bldg., Kansas City, Mo.

Peerless—See Columbus Varnish Co.

Perma-Loc Mfg. Co., Wilkes-Barre, Pa. (See page 695.)

Permatex Carbo-Klean — See Benoit, Constant A.

Phenoid—See Chalmers Chemical Co.

Price, Roy D., Waggoner, Ill. "R-D-P."

Pruden Chemical Co., 2401 W. Washington Blvd., Chicago, Ill.

Quickwork—See Standard Varnish Works.

R-D-P—See Price, Roy D.

Radium—See Milwaukee Auto Specialty Co.

Red Devil Mfg. Co., 2807 Locust St., St. Louis, Mo.

Red Line, Inc., Grand Rapids, Mich. (See page 1047.)

Rie-Nie—See Durkee-Atwood Co.

Rust-Off Mfg. Co., 481 Ellicott St., Buffalo, N. Y. "Carbonsolve."

Scientific Mfg. Co., 426 Prescott Ave., Scranton, Pa. "All-In-One."

Seal-Fast—See Bowes Co.

Standard Varnish Works, 90 West St., New York, N. Y. "Quickwork."

Sterno Corp., New York, N. Y. (See page 1147.)

"Sure Shot" Carbon Remover Co., 643 N. 29th St., Louisville, Ky.

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Ohio Karbon Killer comes in condensed form, and is used at the rate of one level teaspoonful to five gallons of gasoline. One pound will treat 480 gallons, and costs $1.00—about one-fifth of a cent per gallon. Liberal discounts to dealers. Write for prices, etc.

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COMPOUNDS, Carbon Removing (Continued)

Teeaness Products Co., Nyack, N. Y. "Expello."

Torke[illegible]on Mfg. Co., 414 Selby Ave., St. Paul, Mi[illegible]

Torpedo—See Elgin Motor Power Mfg. Co.

Twin City Varnish Co., 208 N. Wabash Ave., Chicago, Ill. "Twinco."

Twinco—See Twin City Varnish Co.

United States Products Co., Highland Bldg., Pittsburgh, Pa. "Kwik-Ak-Shun." (See page 1105.)

[illegible]n Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Carbocide."

Victor—See Fiebing Chemical Co.

Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."

Wallace Mfg. Co., Newark, N. J. "Blowout." (See page 247.)

Wallins—See Chemical Specialties Co.

Wilson-Imperial Co., 115 Chestnut St., Newark, N. J.

Wonder Worker—See Hall-Thompson Co.

Worko Co., Sattley Bldg., Racine, Wis.

World Oil Products Co., 1426 Seneca St., Buffalo, N. Y. "Opco."

Wundr—See Munger Products Co.

Xylo Mfg. Co., Uniontown, Pa. "Xylogen." (See page 227.)

Xylogen—See Xylo Mfg. Co.

Zim Accessories, 208 N. Wabash Ave., Chicago, Ill.

COMPOUNDS, Case Hardening

Achilles—See Houghton & Co.

B-G—See Bell & Gossett Co.

Bell & Gossett Co., 609 W. 30th St., Chicago, Ill. "B-G."

Black Diamond—See Rogers & Hubbard Co.

Blaich Co., Alfred O., 1956 Clybourn Ave., Chicago, Ill. (See page 273.)

Bohnite—See Case Hardening Service Co.

Buchanan Chemical Co., C. G., Baker Ave., Cincinnati, O. "Ferro-Case."

Buchanan Co., Thos., 29 W. Third St., Cincinnati, O. "Hardo."

Bull—See Rodman Chemical Co.

Carbo—See Rodman Chemical Co.

Carbonit—See Springfield Facing Co.

Case Hardening Service Co., 2279 Scranton Rd., Cleveland, O. "Bohnite." (See page 273.)

Deeds Commercial Laboratories, 2150 Montcalm St., Indianapolis, Ind. "Grit."

Ferro Case—See Buchanan Chemical Co.

Grit—See Deeds Commercial Laboratories.

Hafleigh & Co., Cambria & American Sts., Philadelphia, Pa.

Hardo—See Buchanan Co.

Houghton & Co., E. F., 240 W. Somerset St., Philadelphia, Pa. "Achilles," "Pearlite."

Ideal Case-Hardening Compound Co., 107 Water St., New York, N. Y.

Kalux—See Metal Hardening Solution Co.

Keystone—See Rodman Chemical Co.

Metal Hardening Solution Co., 13 Banker Pl., Rochester, N. Y. "Kalux."

Montgomery Chemical Works, (Hamtramck), Detroit, Mich.

Morris & Co., U. S. Yards, Chicago, Ill.

Mosso Laboratories, C. A., 2253 Warren Av[illegible] Chicago, Ill.

Park Chemical Co., Detroit, Mich. "Wood[illegible]sides." (See page 273.)

Pearlite—See Houghton & Co.

Pettinos, Charles E., 25 Church St., New Yor[illegible] N. Y.

R & H—See Roessler & Hasslacher Chemic[illegible] Co.

Rodman Chemical Co., Verona, Pa. "Carbo[illegible] "Keystone," "Bull."

Roessler & Hasslacher Chemical Co., 100 W[illegible]liam St., New York, N. Y. "R & H."

Rogers & Hubbard Co., Middletown, Con[illegible] "Black Diamond,"

Springfield Facing Co., 317 Main St., Sprin[illegible]field, Mass. "Carbonit."

Steco—See Steel Treating Equipment Co.

Steel Treating Equipment Co., 7939-99 L[illegible]fayette Blvd., W., Detroit, Mich. "Stec[illegible]

Woodsides—See Park Chemical Co.

COMPOUNDS, Chemical Plating

(See also Polishes, Metal; also Enamels, Brass)

Arnold, N. B., 1 Sigourney St., Brooklyn, N. "Slikup."

Atlas Auto Supply Co., 697 W. Aust[illegible] Ave., Chicago, Ill. "Silver Quick." (See page 273.)

Durkee-Atwood Co., 40 Wilder St., Minn[illegible]apolis, Minn. "Rie-Nie."

Eastern Rubber Co., 29th & Brown Sts., Phil[illegible]delphia, Pa. "Magic."

Forest City Sales Co., Fremont, Neb. "Qui[illegible] Knick."

Justice Co., A. R., 617 Chestnut St., Phil[illegible]delphia, Pa. "U-Kan-Plate."

Magic—See Eastern Rubber Co.

Naspel—See National Silver Plating Labor[illegible]tories.

National Silver Plating Laboratories, 410 L[illegible]fayette St., New York, N. Y. "Naspel."

Quick Knick—See Forest City Sales Co.

Rie-Nie—See Durkee-Atwood Co.

Silver Quick—See Atlas Auto Supply Co.

Slikup—See Arnold, N. B.

U-Kan-Plate—See Justice Co.

COMPOUNDS, Core

Ebony—See Hill & Griffith Co.

Glutrin—See Robeson Process Co.

Hill & Griffith Co., C. H. & D. Ry. & G[illegible] St., Cincinnati, O. "Ebony," "Linoline."

King Kore Kompound—See Stevens, Fr[illegible]eric B.

Linoline—See Hill & Griffith Co.

McCormick Co., J. S., 2428-36 Railroad [illegible] Pittsburgh, Pa.

Mills Mfg. Co., H. E., 268 Walton St., Sy[illegible]cuse, N. Y.

Obermayer Co., S., 647 Evans St., Cinc[illegible]nati, O.

Robeson Process Co., 18 E. 41st St., New Yo[illegible] N. Y. "Glutrin."

Stevens, Frederic B., Third & Larned St[illegible] Detroit, Mich. "King Kore Kompound."

Swan & Finch Co., 165 Broadway, New Yo[illegible] N. Y.

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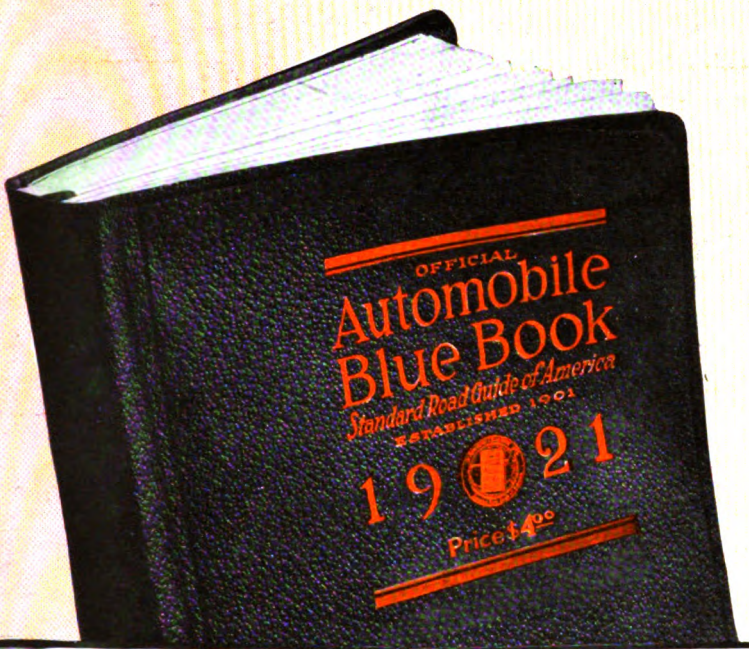

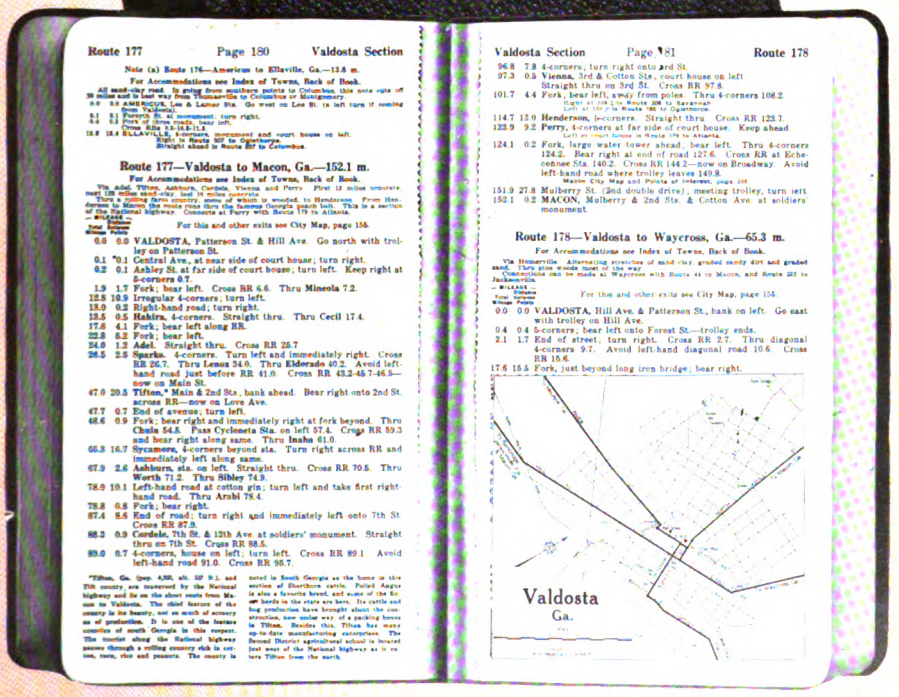

Route 177 Page 180 Valdosta Section

Note (a) Route 176—American to Ellaville, Ga.—13.8 m.

For Accommodations see Index of Towns, Back of Book.

All sand-clay road. In going from southern points to Columbus, this route cuts off 20 miles and is last way from Thomasville to Columbus or Montgomery.

0.0 0.0 AMERICUS, Lee & Lamar Sts. Go west on Lee St. (a left turn if coming from Valdosta).
0.1 0.1 Forsyth St. at monument; turn right.
0.4 0.3 Fork of three roads; bear left.
Cross RRs 1.9-16.8-71.3.
13.8 13.4 ELLAVILLE, Forsyth, monument and court house on left.
Left to Route 307 to Cuthbert.
Straight ahead to Route 27 to Columbus.

Route 177—Valdosta to Macon, Ga.—152.1 m.

For Accommodations see Index of Towns, Back of Book.

Via Adel, Tifton, Ashburn, Cordele, Vienna and Perry. First 13 miles concrete, next 139 miles sand-clay, last 10 miles concrete.

Thru a rolling farm country, some of which is wooded, to Hendersonville. From Hendersonville to Macon the route runs thru the famous Georgia peach belt. This is a section of the National highway. Connects at Perry with Route 179 to Atlanta.

— MILEAGE —
Total Between Points

For this and other exits see City Map, page 156.

0.0 0.0 VALDOSTA, Patterson St. & Hill Ave. Go north with trolley on Patterson St.
0.1 *0.1 Central Ave., at near side of court house; turn right.
0.2 0.1 Ashley St. at far side of court house; turn left. Keep right at 4-corners 0.7.
1.9 1.7 Fork; bear left. Cross RR 6.6. Thru Mineola 7.2.
12.5 10.9 Irregular 4-corners; turn left.
13.0 0.5 Right-hand road; turn right.
13.5 0.5 Hahira, 4-corners. Straight thru. Thru Cecil 17.4.
17.6 4.1 Fork; bear left along RR.
22.8 5.2 Fork; bear left.
24.0 1.2 Adel. Straight thru. Cross RR 25.7
26.5 2.5 Sparks, 4-corners. Turn left and immediately right. Cross RR 26.7. Thru Lenox 34.0. Thru Eldorado 40.2. Avoid left-hand road just before RR 41.6. Cross RR 43.2-45.7-46.5—now on Main St.
47.0 20.5 Tifton,* Main & 2nd Sts., bank ahead. Bear right onto 2nd St. across RR—now on Love Ave.
47.7 0.7 End of avenue; turn left.
48.6 0.9 Fork; bear right and immediately right at fork beyond. Thru Chula 54.8. Pass Cyclonetta Sta. on left 57.4. Cross RR 59.3 and bear right along same. Thru Inaha 61.0.
65.3 16.7 Sycamore, 4-corners beyond sta. Turn right across RR and immediately left along same.
67.9 2.6 Ashburn, sta. on left. Straight thru. Cross RR 70.5. Thru Worth 71.2. Thru Sibley 74.9.
78.0 10.1 Left-hand road at cotton gin; turn left and take first right-hand road. Thru Arabi 78.4.
78.8 0.8 Fork; bear right.
87.4 8.6 End of road; turn right and immediately left onto 7th St. Cross RR 87.9.
88.3 0.9 Cordele, 7th St. & 12th Ave. at soldiers' monument. Straight thru on 7th St. Cross RR 88.5.
89.0 0.7 4-corners, house on left; turn left. Cross RR 89.1. Avoid left-hand road 91.0. Cross RR 98.7.

*Tifton, Ga. (pop. 4,350, alt. 337 ft.), and 7th county are traversed by the National highway and lie on the short route from Macon to Valdosta. The chief feature of the county is its beauty, not so much of scenery as of production. It is one of the leaders counties of south Georgia in this respect. The market along the National highway passes through a rolling country rich in cotton, corn, rice and peanuts. The county is noted in South Georgia as the home in this section of Shorthorn cattle. Pulled Angus is also a favorite breed, and some of the finest herds in the state are here. Its cattle and hog production have brought about the construction, now under way, of a packing house in Tifton. Besides this, Tifton has many up-to-date manufacturing enterprises. The Second District agricultural school is located just west of the National highway as it enters Tifton from the north.

Valdosta Section Page 181 Route 178

96.8 7.8 4-corners; turn right onto 3rd St.
97.3 0.5 Vienna, 3rd & Cotton Sts., court house on left.
Straight thru on 3rd St. Cross RR 97.8.
101.7 4.4 Fork; bear left, away from poles. Thru 4-corners 108.2.
Right at 108.2 to Route 308 to Savannah.
Left at 108.2 to Route 185 to Cuthbert.
114.7 13.0 Henderson, 5-corners. Straight thru. Cross RR 123.7.
123.9 9.2 Perry, 4-corners at far side of court house. Keep ahead.
Left at court house to Route 179 to Atlanta.
124.1 0.2 Fork, large water tower ahead; bear left. Thru 4-corners 124.2. Bear right at end of road 127.6. Cross RR at Echeconnee Sta. 140.2. Cross RR 144.2—now on Broadway. Avoid left-hand road where trolley leaves 149.8.
Master City Map and Points of Interest, page 156
151.9 27.8 Mulberry St. (2nd double drive); meeting trolley, turn left.
152.1 0.2 MACON, Mulberry & 2nd Sts. & Cotton Ave. at soldiers' monument.

Route 178—Valdosta to Waycross, Ga.—65.3 m.

For Accommodations see Index of Towns, Back of Book.

Via Homerville. Alternating stretches of sand-clay, graded sandy dirt and graded sand. Thru pine woods most of the way.

Connections can be made at Waycross with Route 44 to Macon, and Route 203 to Jacksonville.

— MILEAGE —
Total Between Points

For this and other exits see City Map, page 156.

0.0 0.0 VALDOSTA, Hill Ave. & Patterson St., bank on left. Go east with trolley on Hill Ave.
0.4 0.4 5-corners; bear left onto Forest St.—trolley ends.
2.1 1.7 End of street, turn right. Cross RR 2.7. Thru diagonal 4-corners 9.7. Avoid left-hand diagonal road 10.6. Cross RR 15.6.
17.6 15.5 Fork, just beyond long iron bridge; bear right.

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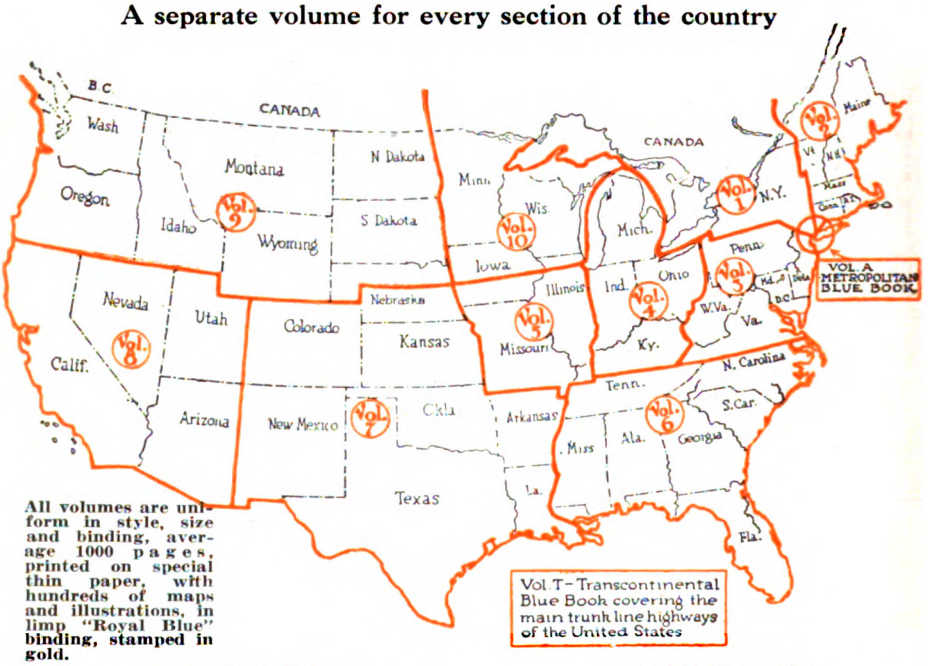

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Vol. 2—Connecticut, Massachusetts, New Hampshire, Rhode Island, Vermont, Maine, Quebec, New Brunswick, Nova Scotia and New York State east of Hudson River. **$4.00 net**

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Trade Price Sheet

The New 1921 Automobile Blue Books

The Automobile Blue Books, unlike other commodities, are sold for actually less than their cost of manufacture. This is only possible on account of the advertising carried in them but, as the advertising rates are determined in advance, and as a very large edition would not increase our income, but, on the contrary, decrease it, our printing orders are based on actual orders in hand before we go to press.

The special discount schedule on orders placed before press dates offers a real inducement to dealers to place their orders early and, at the same time, absolutely insure a supply of the books after they are published.

Special Schedule effective only before dates on which 1921 Blue Books go to press

Volume	Retail Price Each	On Orders Placed Before	Will Be Published, Delivered and Billed	In Lots of Less Than 100		In Lots of 100 or More	
				Discount	Net Price F. O. B. Chicago	Discount	Net Price F. O. B. Chicago
1	$4.00	Feb. 8, 1921	April, 1921	1/3 & 5%	$2.53 1/3	1/3 & 10%	$2.40
2	$4.00	Feb. 23, 1921	May, 1921	1/3 & 5%	$2.53 1/3	1/3 & 10%	$2.40
3	$4.00	Dec. 31, 1920	Mar., 1921	1/3 & 5%	$2.53 1/3	1/3 & 10%	$2.40
4	$4.00	Mar. 12, 1921	May, 1921	1/3 & 5%	$2.53 1/3	1/3 & 10%	$2.40
5	$4.00	Mar. 21, 1921	May, 1921	1/3 & 5%	$2.53 1/3	1/3 & 10%	$2.40
6	$4.00	Aug. 14, 1920	Oct., 1920	1/3 & 5%	$2.53 1/3	1/3 & 10%	$2.40
7	$4.00	Nov. 13, 1920	Jan., 1921	1/3 & 5%	$2.53 1/3	1/3 & 10%	$2.40
8	$4.00	Oct. 13, 1920	Dec., 1920	1/3 & 5%	$2.53 1/3	1/3 & 10%	$2.40
9	$4.00	Jan. 24, 1921	April, 1921	1/3 & 5%	$2.53 1/3	1/3 & 10%	$2.40
10	$4.00	Mar. 31, 1921	May, 1921	1/3 & 5%	$2.53 1/3	1/3 & 10%	$2.40
T	$5.00	April 16, 1921	June, 1921	1/3 & 5%	$3.16 2/3	1/3 & 10%	$3.00
A	$3.00	April 30, 1921	June, 1921	1/3 & 5%	$1.90	1/3 & 10%	$1.80

Regular Schedule (in effect after press dates)

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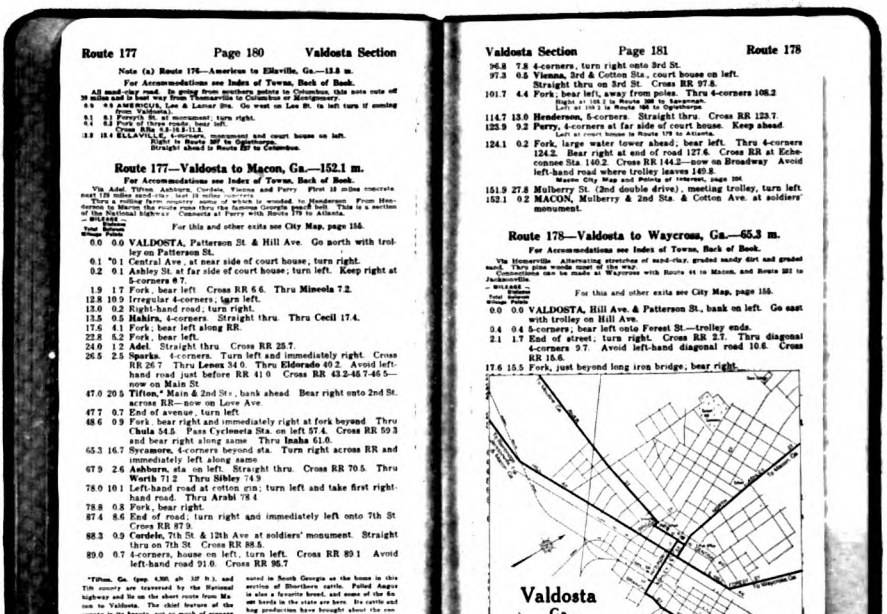

Route 177 Page 180 Valdosta Section

Note (a) Route 176—Americus to Ellaville, Ga.—13.8 m.

For Accommodations see Index of Towns, Back of Book.

All sand-clay road. In going from northern points to Columbus, this note cuts off 20 miles and is best way from Thomasville to Columbus or Montgomery.

0.0 0.0 AMERICUS, Lee & Lamar Sts. On west on Lee St. to left turn if coming from Valdosta).
0.1 0.1 Forks, left of monument, turn right.
0.4 0.3 Forks, 3-corners, bear left.
Cross Rds. 9.8-10.8-11.8.
3.8 10.8 ELLAVILLE, 4-corners, monument and court house on left.
Right to Route 307 to Oglethorpe.
Straight ahead to Route 137 to Columbus.

Route 177—Valdosta to Macon, Ga.—152.1 m.

For Accommodations see Index of Towns, Back of Book.

Via Adel, Tifton, Ashburn, Cordele, Vienna and Perry. First 18 miles concrete, next 120 miles sand-clay, last 10 miles concrete.

Tifton is a million farm country, some of which is wooded, to Henderson. From Henderson to Macon the route runs thru the famous Georgia peach belt. This is a section of the National highway. Connects at Perry with Route 179 to Atlanta.

— MILEAGE —
Total Between Whole Points

For this and other exits see City Map, page 156.

0.0 0.0 VALDOSTA, Patterson St. & Hill Ave. Go north with trolley on Patterson St.
0.1 *0.1 Central Ave., at near side of court house; turn right.
0.2 0.1 Ashley St. at far side of court house; turn left. Keep right at 5-corners 6.7.
1.9 1.7 Fork, bear left. Cross RR 6.6. Thru Mineola 7.2.
12.8 10.9 Irregular 4-corners; turn left.
13.0 0.2 Right-hand road; turn right.
13.5 0.5 Habira, 4-corners. Straight thru. Thru Cecil 17.4.
17.6 4.1 Fork; bear left along RR.
22.8 5.2 Fork, bear left.
24.0 1.2 Adel. Straight thru. Cross RR 25.7.
26.5 2.5 Sparks, 4-corners. Turn left and immediately right. Cross RR 26.7. Thru Lenox 34.0. Thru Eldorado 40.2. Avoid left-hand road just before RR 41.0. Cross RR 43.2-46.7-46.5—now on Main St.
47.0 20.5 Tifton,* Main & 2nd Sts., bank ahead. Bear right onto 2nd St. across RR—now on Love Ave.
47.7 0.7 End of avenue, turn left.
48.6 0.9 Fork, bear right and immediately right at fork beyond. Thru Chula 54.5. Pass Cyclonesta Sta. on left 57.4. Cross RR 59.3 and bear right along same. Thru Inaha 61.0.
65.3 16.7 Sycamore, 4-corners beyond sta. Turn right across RR and immediately left along same.
67.9 2.6 Ashburn, sta. on left. Straight thru. Cross RR 70.5. Thru Worth 71.2. Thru Sibley 74.9.
78.0 10.1 Left-hand road at cotton gin; turn left and take first right-hand road. Thru Arabi 78.4.
78.8 0.8 Fork, bear right.
87.4 8.6 End of road; turn right and immediately left onto 7th St. Cross RR 87.9.
88.3 0.9 Cordele, 7th St. & 12th Ave. at soldiers' monument. Straight thru on 7th St. Cross RR 88.5.
89.0 0.7 4-corners, house on left; turn left. Cross RR 89.1. Avoid left-hand road 91.0. Cross RR 95.7.

*Tifton, Ga. (pop. 4,308, alt. 337 ft.), and Tift county are traversed by the National highway and lie on the short route from Macon to Valdosta. The chief feature of the county is its beauty, not so much of scenery as of production. It is one of the finest counties of south Georgia in this respect. The tourist along the National highway passes through a rolling country rich in cotton, corn, rice and peanuts. The county is noted in South Georgia as the home in this section of Shorthorn cattle. Polled Angus is also a favorite breed, and some of the finest herds in the state are here. Its cattle and hog production have brought about the construction, now under way, of a packing house in Tifton. Besides this, Tifton has many up-to-date manufacturing enterprises. The Second District agricultural school is located just west of the National highway as it enters Tifton from the north.

Valdosta Section Page 181 Route 178

96.8 7.8 4-corners; turn right onto 3rd St.
97.3 0.5 Vienna, 3rd & Cotton Sts., court house on left. Straight thru on 3rd St. Cross RR 97.8.
101.7 4.4 Fork, bear left, away from poles. Thru 4-corners 108.2.
Right at 108.2 to Route 300 to Savannah.
Left at 108.2 to Route 168 to Oglethorpe.
114.7 13.0 Henderson, 5-corners. Straight thru. Cross RR 123.7.
123.9 9.2 Perry, 4-corners at far side of court house. Keep ahead.
Left at court house to Route 179 to Atlanta.
124.1 0.2 Fork, large water tower ahead; bear left. Thru 4-corners 124.2. Bear right at end of road 127.6. Cross RR at Echeconnee Sta. 140.2. Cross RR 144.2—now on Broadway. Avoid left-hand road where trolley leaves 149.8.
Macon City Map and Points of Interest, page 198.
151.9 27.8 Mulberry St. (2nd double drive), meeting trolley, turn left.
152.1 0.2 MACON, Mulberry & 2nd Sts. & Cotton Ave. at soldiers' monument.

Route 178—Valdosta to Waycross, Ga.—65.3 m.

For Accommodations see Index of Towns, Back of Book.

Via Homerville. Alternating stretches of sand-clay, graded sandy dirt and graded sand. Thru pine woods most of the way.

Connections can be made at Waycross with Route 44 to Macon, and Route 301 to Jacksonville.

— MILEAGE —
Total Between Whole Points

For this and other exits see City Map, page 155.

0.0 0.0 VALDOSTA, Hill Ave. & Patterson St., bank on left. Go east with trolley on Hill Ave.
0.4 0.4 5-corners; bear left onto Forest St.—trolley ends.
2.1 1.7 End of street; turn right. Cross RR 2.7. Thru diagonal 4-corners 9.7. Avoid left-hand diagonal road 10.6. Cross RR 15.6.
17.6 15.5 Fork, just beyond long iron bridge; bear right.

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COMPOUNDS, Gasoline Treating

Alverd Sales Co., 80 Terrace, Buffalo, N. Y.
American Sales Co., Haverhill, Mass. "Kar-Bon-Ex."
Auto Remedy Co., Evans St., Cincinnati, O. "Magic."
Boggs Co., Kirk A., Fort Dodge, Iowa. "Gas-O-Life."
Bush Chemical Co., St. Louis, Mo.
Car-Bon-Ale Co., Lincoln, Neb.
Carbo-Line Co., Hastings, Neb.
Carbonvoid—See Lloyd's of America.
Chemical Reduction Co., 88 Broad St., Boston, Mass. "Pep-O."
Culco—See Culmer Chemical Co.
Culmer Chemical Co., Independence, Kans. "Culco."
Desmond Mfg. Co., B. G., 846 Atlantic Ave., Brooklyn, N. Y. "Miracle."
Eccolene Co., Detroit, Mich. (See page 275.)
Econ-O-Kleen Fuel Co., 105 Labree Ave., Thief River Falls, Minn.
Farley & MacNeill, 105-07 Federal St., Boston, Mass. (Sole Distributors for Greenleaf Products Co., Boston, Mass. "O-Co.")
Fry Mfg. Co., S., 1024 Perry St., Spokane, Wash. "Hi-Life."
Fueline Co., 188 Market St., Newark, N. J.
Gas-Aid—See Hy-Klas Auto Products Co.
Gas-Zip—See Sealer Distributing Co.
Gas-O-Life—See Boggs Co.
Gaso-Tonic Co., 19 E. Second St., Cincinnati, O.
Gastine Co., Bridgeton, N. J.
Go Gas, 42d St. & Lexington Ave., New York, N. Y.
Greenleaf Products Co.—See Farley & MacNeill.
Hi-Life—See Fry Mfg. Co.
Hy-Klas Auto Products Co., Jackson, Mich. "Gas-Aid."
Inajiff Mfg. Co., Walsh Bldg., Akron, O.
Kar-Bon-Ex—See American Sales Co.
Karbonoid Chemical Co., 818 East Ave., Elyria, O.
King, L. Gerald, 21 Pine St., Deposit, N. Y.
King Karbon Killer Corp., 15 Park Row, New York, N. Y.
Lloyd's of America, Bradley Beach, N. J. "Carbonvoid."
Lot-A-Pep—See Panvar Co.
Lowe Mfg. Co., J. H., Seneca Falls, N. Y.
Magic—See Auto Remedy Co.
Mercier, Paul, 907 John St., Utica, N. Y.
Miracle—See Desmond Mfg. Co.
Morgo Oil Co., White Bldg., Buffalo, N. Y.
Mormiles Co., 416 Sherman St., Chicago, Ill.
Moto Whiz—See Ray Mfg. Co.
Motorkool Oil Co., 20 E. Jackson Blvd., Chicago, Ill. (See page 1141.)
Motor-Pep—See Utilities Co.
Motor Run Oil Co., 9 E. 15th St., Brooklyn, N. Y.
Motorlife Mfg. Co., 955-57 Poplar Ave., Memphis, Tenn.
O-Co.—See Farley & MacNeill.
Oxo—See Oxygen Products Co.
Oxygen Products Co., Thief River Falls, Minn. "Oxo."
Panvar Co., Bulletin Bldg., Philadelphia, Pa. "Lot-A-Pep."
Pep-O—See Chemical Reduction Co.
Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn.
Power Gas Products Co., 2921 Stevens Ave., Minneapolis, Minn.
Ray Mfg. Co., 1627 Columbia Ave., Philadelphia, Pa. "Moto Whiz."
Red Devil Mfg. Co., 2807 Locust St., St. Louis, Mo. "Speedo."
Sales Service Co., 18 Water St., New York, N. Y.
Sealer Distributing Co., 80 E. Jackson St., Chicago, Ill. "Gas-Zip."
Speedo—See Red Devil Mfg. Co.
Speedolene Co., Dallas, Texas.
Tankii Chemical Sales Co., 224 High St., Cleveland, O.
Utilities Co., Citizens Bldg., Cleveland, O. "Motor-Pep."
Wizard Products Co., Buffalo, N. Y. (See page 275.)
Xylo Mfg. Co., Uniontown, Pa. "Xylogen." (See page 227.)
Xylogen—See Xylo Mfg. Co.

COMPOUNDS, Glass Windshield

(For keeping glass clear in rain or fog; for Mechanical Cleaners—See Cleaners, Glass Windshield)

Alder Chemical Co., 135 Washington St., Mt. Vernon, N. Y. "Star Clean."
All-In-One—See Scientific Mfg. Co.
Badger Mfg. Corp., Milwaukee, Wis. (See page 173.)
Bear Cat Products Co., Capitol Hill Sta., Oklahoma City, Okla. "Clearite."
Blue Ribbon—See International Metal Polish Co.
C-Cleer—See Neu Metal Products Corp.
C-Cleer—See Sole Mfg. Co.
Clearite—See Bear Cat Products Co.
Clamert Mfg. Co., Third & Ross Sts., Pittsburgh, Pa. "Seerite."
Clear-Site—See Wa-Po Products Co.
Clear Vision—See Safety Storage Co.
Clear Vision—See Racine Accessories Mfg. Co.
Cleroline Chemical Co., 503 Fifth Ave., New York, N. Y. (See page 275.)
Cleveland Presto-Cloth Co., 1401 E. 93d St., Cleveland, O.
Conversation Products Co., 221 W. Fifth St., Los Angeles, Cal. "Security."
Cook, J. J., 403 Grand Ave., Milwaukee, Wis.
Crystal-On Chemical Co., Charleston, S. C.
Davis Chemical Mfg. Co., 306 Warren Ave., Brockton, Mass. "Frakto-Kloth."
Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
Fog-O-Lite—See National Chemical Co.
Forbes Co., Benjamin P., 409 Superior Ave., N. W., Cleveland, O. "Glasbrite."
Frakto-Kloth—See Davis Chemical Mfg. Co.
Gastine Co., Bridgeton, N. J.
General Mfg. Co., 240 Fifth St., San Francisco, Cal. "Klear-Glas."
Glasbrite—See Forbes Co.
Greb Co., 195 State St., Boston, Mass. (See page 743.)
Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker." (See page 227.)
Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whiz."
International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."
Klear-Glas—See General Mfg. Co.
Mirrolike Mfg. Co., 203 Eighth St., Long Island City, N. Y. "See Clear."
Mosher, J. H., 23 Walnut St., Seneca Falls, N. Y. "Sturm Wrag."

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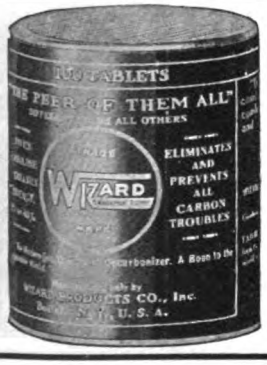

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National Chemical Co., Canal Fulton, O. "Fog-O-Lite."
Neu Metal Products Corp., Whipple Bldg., Binghamton, N. Y. "C-Cleer."
Racine Accessories Mfg. Co., 14th & Clark Sts., Racine, Wis. "Clear Vision." (See page 481.)
Rain-a-Way—See Badger Mfg. Corp.
Rainy Racer Co., 3-5 E. Redwood St., Baltimore, Md.
Rie-Nie—See Durkee-Atwood Co.
Safety Storage Co., 700 Central Ave., Minneapolis, Minn. "Clear Vision."
Scientific Mfg. Co., 426 Prescott Ave., Scranton, Pa. "All-In-One."
Security—See Conversation Products Co.
See Clear—See Mirrolike Mfg. Co.
Seerite—See Clamert Mfg. Co.
Sole Mfg. Co., 148 Chambers St., New York, N. Y. "C-Cleer."
Star Clean—See Alder Chemical Co.
Sturm Wrag—See Mosher, J. H.
Uasco—See Unique Auto Specialties Co.
Unique Auto Specialties Co., 280 Golden Gate Ave., San Francisco, Cal. "Uasco."
Wa-Po Products Co., 111 W. South Water St., Chicago, Ill. "Clear-Site."
Whiz—See Hollingshead Co.
Wonder Worker—See Hall-Thompson Co.

COMPOUNDS, GRINDING — See Compounds, Valve Grinding; also Compounds, Bearing Grinding

COMPOUNDS, HARDENING—See Compounds, Case Hardening

COMPOUNDS, LUMINOUS—See Paints, Luminous

COMPOUNDS, PHOSPHORESCENT — See Paints, Luminous

COMPOUNDS, PLATING — See Compounds, Chemical Plating

COMPOUNDS, POLISHING — See Compounds, Buffing and Polishing

COMPOUNDS, Puncture Sealing

(For use in pneumatic tires for automatically sealing small leaks resulting from punctures)

Alcemo Mfg. Co., 120 Bridge St., Newark, N. J. "Kor-Ker." (See page 247.)
American Automotive Accessory Co., 917 Van Ness Ave., San Francisco, Cal.
Auto Necessities Co., Austin, Minn.
Blau, Jacob B., 622 N. Connecticut Ave., Atlantic City, N. J.
Blu-Devl—See Swan Mfg. Co.
Dannenhirsch Co., 1905 W. Dauphin St., Philadelphia, Pa. "Tyre Lyfe."
Fry Mfg. Co., S. 1024 Perry St., Spokane, Wash.
Gee-Bee—See Green Bay Supply Co.
Green Bay Supply Co., 518 Maine St., Green Bay, Wis. "Gee-Bee."
Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whiz."
Innerseal—See Syndicate Sales Co.
Kor-Ker—See Alcemo Mfg. Co.
Nu-Way Puncture Cure Co., 224 Pine St., Green Bay, Wis.
Plugit Co., Florence, S. C.
Puncture-Seal—See Xylo Mfg. Co.
Ray Mfg. Co., 1627 Columbia Ave., Philadelphia, Pa. "Rayseal."
Rayseal—See Ray Mfg. Co.
Relax Co., 2118 Monroe Ave., Norwood, O.
Swan Mfg. Co., Lima, O. "Blu-Devl."
Syndicate Sales Co., Syndicate Trust Bldg., St. Louis, Mo. "Innerseal."
Tubo Mfg. Co., 610 N. Vandeventer Ave., St. Louis, Mo.
Tyre Lyfe—See Dannenhirsch Co.
Whiz—See Hollingshead Co.
Xylo Mfg. Co., Uniontown, Pa. "Puncture-Seal." (See page 227.)

COMPOUNDS, Radiator Cleaning

(For Radiator Cement—See Cement, Radiator)

Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite." (See page 267.)
Ad-el-ite—See Adams & Elting Co.
All-In-One—See Scientific Mfg. Co.
Corol Co., 127 N. Dearborn St., Chicago, Ill.
Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
Dutch—See Van Cleef Bros.
Elder Mfg. Co., 2805 N. Illinois St., Indianapolis, Ind. "Radio."
Field Auto Compound Mfg. Co., Auburn, Mo.
Fluff-Foe—See Garratt-Callahan Co.
Frexalene Mfg. Co., 32-40 S. Clinton St., Chicago, Ill.
Garratt-Callahan Co., 37 S. Clinton St., Chicago, Ill. "Fluff-Foe."
Gee-Bee—See Green Bay Supply Co.
Green Bay Supply Co., 518 Maine St., Green Bay, Wis. "Gee-Bee."
Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker." (See page 227.)
Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whiz."
Karbonoid Chemical Co., 318 East Ave., Elyria, O. "No-Rust-O."
No-Rusto-O—See Karbonoid Chemical Co.
Northwestern Chemical Co., 785 State St., Marietta, O. "Skalex." (See page 277.)
Opco—See World Oil Products Co.
Perma-Loc Mfg. Co., Wilkes-Barre, Pa. (See page 695.)
Radio—See Elder Mfg. Co.
Rie-Nie—See Durkee-Atwood Co.
Scientific Mfg. Co., 426 Prospect Ave., Scranton, Pa. "All-In-One."
Skalex—See Northwestern Chemical Co.
Sutherland & Co., P., 232 Milk St., Boston, Mass. "Velvet."
Tubo Mfg. Co., 611 N. Vandeventer Ave., St. Louis, Mo.
Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."
Velvet—See Sutherland & Co.
Whiz—See Hollingshead Co.
Wonder Worker—See Hall-Thompson Co.
World Oil Products Co., 1426 Seneca St., Buffalo, N. Y. "Opco."
Xylo Mfg. Co., Uniontown, Pa. (See page 227.)
Young & McBride, Catasauqua, Pa.

COMPOUNDS, RADIATOR SEALING — See Cement, Radiator Repair

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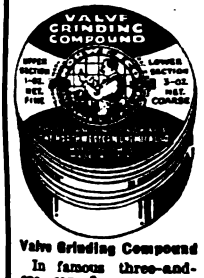
Se-Ment-Ol
(Liquid or Powder)

A radiator repairer that finds leaks readily and fixes them permanently. One 75c can will repair the largest cooling system. Prices: List price per can, 75c. Packed 12 in carton, $9.00; dealer's net price, $5.40 per carton.

Mohair Top Dressing and Lining Dye

Penetrates and waterproofs the fabric. Prices, pints, 90c. Carton of 12 List price, $10.80; dealer's net price, $7.02 per carton. Quarts, $1.65. Carton of 12—List price, $19.80; dealer's net price, $12.87 per carton.



Valve Grinding Compound

In famous three-and-one can—3 oz. coarse, 1 oz. fine. Free from ground glass or emery. Price, per 4 oz. can, 45c. Carton of 12—List price, $5.40; dealer's net price, $3.24 per carton. One lb. can, price, $1.25. Carton of 12—List price, $15.00; dealer's net price, $9.00 per carton.

WANTED!

There are few products on the market as much in demand as the standard NORWESCO line of "chemically correct" utilities.

Stocking *one* universally accepted line, and eliminating slower selling makes, means less money tied up in stock, bigger profit on a smaller investment and a quicker turnover.

You make no mistake in choosing NORWESCO products—they give you and your trade most value for the money. Get acquainted with them *today!*

Ask Your Jobber or Write to Us for Full Particulars

There's a NORWESCO product for every need

Se-Ment-Ol Radiator Cement (Liquid or Powder)
Carbonox Carbon Remover.
Never-Burn Engine Enamel.
Tire Lac Tire Paint.
Norwesco Rim and Gasket Shellac.
Norwesco Neatsfoot Clutch and Brake Compound.
Norwesco Automobile and Furniture Polish.
Norwesco Color Varnishes.
Norwesco Mechanic's Blue.
Norwesco Soldering Paste.
Norwesco Pumice Hand Soap.
Norwesco Rim Graphite Coating.
Norwesco Iron Cement.
Norwesco Soldering Salt.

THE NORTHWESTERN CHEMICAL CO.

785 State Street
Marietta, Ohio

Canadian Factory:
Montreal

Utility Black

An air-drying enamel for metal parts. Half pints, 65 cents. Carton of 12, list price, $7.80; dealer's net price, $5.07 per carton. Price, pints, $1.10. Carton of 12, list price, $13.20; dealer's net price, $8.58 per carton. Quarts, $2.00. Carton of 12, list price, $24.00; dealer's net price, $15.60 per carton.

Leather Pantasote Top and Upholstery Dressing

Waterproofs and preserves. Price, pints, 90c. Carton of 12—List price, $10.80; dealer's net price, $7.02 per carton. Quarts, $1.65. Carton of 12—List price, $19.80; dealer's net price, $12.87 per carton.

Skalex

Removes all lime, rust and sediment. Prevents overheating—cannot injure the radiator. Price, per 14 oz. can, 75c. Packed 12 in carton—List price, $9.00; dealer's net price, $5.40 per carton.

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COMPOUNDS, Rust Preventing and Removing

American Chemical Paint Co., 273 E. Jefferson St., Detroit, Mich. "Deoxidine." (See page 279.)

American Rust Proof Co., 220 Fifth Ave., New York, N. Y. "Vatudrip."

Benoit, Constant A., Brooklyn, N. Y. "Permatex Solvo-Rust." (See page 225.)

Berry Bros., 211 Lieb St., Detroit, Mich. "Raven."

Bradford Oil Co., 152 Pleasant St., Lynn, Mass. "Cedaroleum."

Cedaroleum—See Bradford Oil Co.

Conversion Products Corp., 149 Broadway, New York, N. Y. "Stazon."

Corol Co., 127 N. Dearborn St., Chicago, Ill.

Dearborn Chemical Co., 332 S. Michigan Ave., Chicago, Ill. "No-Ox-Id."

Deoxidine—See American Chemical Paint Co.

Fiske Bros. Refining Co., 24 State St., New York, N. Y.

Frasse & Co., Peter A., 417-21 Canal St., New York, N. Y. (Sole Distributors for Sinclair Co., A. C., New York, N. Y. "Meno.") (See page 279.)

Gramoline Co., Lumber Exchange Bldg., Chicago, Ill. "Rusticene."

Karbonoid Chemical Co., 318 East Ave., Elyria, O. "Non-Rustine."

Meno—See Frasse & Co.

No-Ox-Id—See Dearborn Chemical Co.

Non-Rustine—See Karbonoid Chemical Co.

Oakley Chemical Co., 22 Thames St., New York, N. Y. "Oakite."

Oakite—See Oakley Chemical Co.

Parker Rust Proof Co., 2177 Milwaukee Ave., Detroit, Mich.

Permatex Solvo-Rust—See Benoit, Constant A.

Polygon Products Co., 141 Milk St., Boston, Mass. "Tasgon." (See page 279.)

Raven—See Berry Bros.

Rust-Off Mfg. Co., 481 Ellicott St., Buffalo, N. Y.

Rust Proof Mfg. Co., 1779 Atlantic Ave., Brooklyn, N. Y.

Rusticene—See Gramoline Co.

Sinclair Co., A. C.—See Frasse & Co.

Stazon—See Conversion Products Co.

Tasgon—See Polygon Products Co.

Vatudrip—See American Rust Proof Co.

COMPOUNDS, SPOKE TIGHTENING—See Compounds, Wood Wheel Tightening

COMPOUNDS, Tar Removing

(For removing Tar or Road Oils from bodies)

Be-Be-Co.—See Boston Blacking Co.

Benoit, Constant A., Brooklyn, N. Y. "Permatex Taroff." (See page 225.)

Boston Blacking Co., Third & Potter Sts., Cambridge, Mass. "Be-Be-Co."

Cooper & Osterhout, 342 Vanduzer St., Watertown, N. Y. "Tarof."

du Pont de Nemours & Co., E. I., Wilmington, Del. "Pontoklene." (See page 223.)

Em-C-Lac Co., Smith St., Far Rockaway, N. Y.

Franklin Distributing Co., 148 Elmwood Ave., Buffalo, N. Y.

J. M. Pease—See Kimo Mfg. Co.

Johnson & Son, S. C., 1012 16th St., Racine, Wis.

Kimo Mfg. Co., 2665 Main St., Buffalo, N. Y. "J. M. Pease."

Mirrolike Mfg. Co., 203 Eighth St., Long Island City, N. Y.

Nacto Cleaner Corp., 2171-73 Madison Ave., New York, N. Y.

No mo Tar—See Van Buren Co.

Noble Piano Co., 4841 Woodward Ave., Detroit, Mich. "Tar-Off."

Permatex Taroff—See Benoit, Constant A.

Polygon Products Co., 141 Milk St., Boston, Mass. "Tarr-Gon." (See page 279.)

Pontoklene—See Du Pont de Nemours & Co.

Ray Chemical Co., 53 Halsey St., Newark, N. J. "Rayco."

Rayco—See Ray Chemical Co.

Rust-Off Mfg. Co., 481 Ellicott St., Buffalo, N. Y. "Tar-Off."

Sanozone Chemical Co., 5 N. 20th St., Philadelphia, Pa.

Simons Mfg. Co., 2121 Michigan Ave., Chicago, Ill.

Tar-Off—See Noble Piano Co.

Tar-Off—See Rust-Off Mfg. Co.

Tarof—See Cooper & Osterhout.

Tarr-Gon—See Polygon Products Co.

Van Buren Co., G. B., 522 Fifth Ave., New York, N. Y. "No Mo Tar." (See page 739.)

COMPOUNDS, Tire Filling

(Rubber or composition filling for Pneumatic Tires to be used in place of air)

Aero-Cushion Inner-Tire & Rubber Co., Genesee Ave., Saginaw, Mich. (See page 989.)

Aero Cushion Tire Co., 525-27 W. Santa Clara St., San Jose, Cal.

Alastic Tire Cushion Co., 1419-21 Locust St., St. Louis, Mo.

Burgess Tire Co., Kansas City, Mo.

Carter-Bell Mfg. Co., Morris Ave., Millburn, N. J.

Cut Weld—See Keystone Rubber Mfg. Co.

Dahl Punctureless Filler & Rim Co., 1424-26 Hennepin Ave., Minneapolis, Minn.

Essenkay Products Co., 220 W. Superior St., Chicago, Ill.

Keystone Rubber Mfg. Co., 135 E. 11th St., Erie, Pa. "Cut Weld."

National Rubber Filler Co., 220 Main St., Midlothian, Texas.

National Synthetic Rubber & Tire Co., 2 Rector St., New York, N. Y. "Resilonite."

National Tire Cushion Co., 1511 McGee St., Kansas City, Mo.

Newmastic Co., Cleveland, O.

Pan-American Rubber Co., Watertown, Wis. "Parco."

Parco—See Pan-American Rubber Co.

Peerless Tire Fill Co., 7119 N. Clark St., Chicago, Ill.

Resilonite—See National Synthetic Rubber & Tire Co.

Skalex—See Northwestern Chemical Co.

Universal Tire Filler Co., 441-43 Hawthorne Ave., Portland, Ore.

Velvet—See Wolverine Tire Cushion & Accessory Co.

Wolverine Tire Cushion & Accessory Co., 1906-10 W. Fort St., Detroit, Mich. "Velvet."

COMPOUNDS, Tire Preserving

(Chemical compound or paint for applying to tires to preserve the rubber—See also Paints, Rubber.)

Dees & Wheatley, 47 Main St., Midlothian, Tex.

Kepuruber—See Rubber Preserving Co.

Rubber Preserving Co., Otis Bldg., Chicago, Ill. "Kerpuruber."

Save-O Co., Asylum & Ann Sts., Hartford, Conn.

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To Prepare Automobile Bodies for Painting
Use DEOXIDINE—It Prevents Rust
from forming under the paint

Deoxidine prevents rust from forming under paint. Removes, rust, dirt, oil, grease, hand marks, acids, before painting. Prevents all defects from developing in the painted finish. Deoxidine is successfully used by the leading automobile makers.

AMERICAN CHEMICAL PAINT COMPANY

3012 Singer Building, New York — **1118 So. Eleventh St., Philadelphia** — **273 East Jefferson St., Detroit**

TASGON

"The Magic Fluid of Many Uses"

Loosens nuts, bolts and any fitting that is rusted or otherwise stuck. No clipping. No cutting. No parts destroyed. No time wasted.

A necessity to automobile owners, repairmen, mechanics, etc.

Tasgon prevents Carbon, Stops Squeaks in Springs, Primes Cold Motors and has hundreds of other handy uses.

Tasgon is the Original, Genuine and Patented Rust Loosener.

Tarr-Gon

Cleans Automobiles Inside and Outside.

Removes any Grease or Tar spot and gives an excellent polish.

Cleans grease and dirt from leather cushions, makes leather and pantasote tops look like new.

Cleans running boards, headlights, windshields and tires.

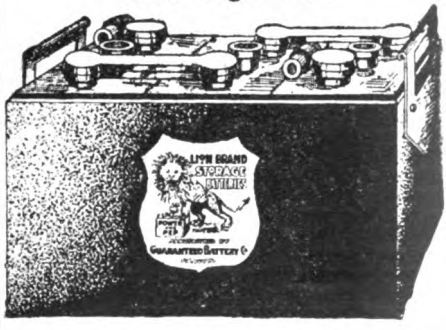
Cleans grease and dirt from the hands.
Tarr-Gon is just as useful in the home.
Tasgon and Tarr-Gon—for sale by all dealers. Write for descriptive literature. Big repeat-order sellers.

POLYGON PRODUCTS CO.
141 Milk Street, Boston, Mass.
(Made by Samuel Cabot, Inc.)

LION BRAND STORAGE BATTERIES

Give a Positive Assurance of the Greatest

"POWER and PEP"
With Longest Life



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Write for our New Catalog and Agency Proposition.

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An Efficient and Economical Solvent

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PETER A. FRASSE & CO., Inc.
417-421 CANAL STREET, NEW YORK
PHILADELPHIA — BUFFALO

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COMPOUNDS, Tire Repair

(For filling cuts in outer casings or shoes)

American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "Kutite."

American Rubber & Tire Co., 100 Beech St., Akron, O. "Stickfast."

Atlas Auto Supply Co., 607 W. Austin Ave., Chicago, Ill. "Tire Doh." (See page 273.)

Boska—See Standard Tire Filler Co.

C. O. T. Gum Gum—See Tingley & Co.

Cut Weld—See Keystone Rubber Mfg. Co.

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."

Eastern Rubber Co., 29th & Brown Sts., Philadelphia, Pa. "Magic."

Empire Rubber & Tire Co., Mulberry St. & Clinton Ave., Trenton, N. J.

Ev-R-Wear—See Young Rubber Products Co.

Firestone Tire & Rubber Co., Miller & Sweitzer Ave., Akron, O.

Giant Tire & Rubber Co., Lima St. & Western Ave., Findlay, O. "M. & M. Kneadit."

Goodrich Co., B. F., S. Main St., Akron, O.

Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker." (See page 227.)

Henry's—See Perfectfix Rubber Co.

Jiffy—See Johnstown Rubber Co.

Johnstown Rubber Co., Johnstown, Pa. "Jiffy."

Keystone Rubber Mfg. Co., 135 E. 11th St., Erie, Pa. "Cut Weld."

Kushion-Kore—See American Kushion-Kore Tire Co.

Kutite—See American Automobile Accessories Co.

Lee Tire & Rubber Co., 245 W. 55th St., New York, N. Y.

M. & M. Kneadit—See Giant Tire & Rubber Co.

Magic—See Eastern Rubber Co.

Mastic—See Michelin Tire Co.

Mengo Products Co., 537 Rosedale St., (Wilkinsburg), Pittsburgh, Pa.

Michelin Tire Co., Milltown, N. J. "Mastic."

Miller Rubber Co., Akron, O. "Pluggum." (See page 979.)

National Rubber & Specialties Co., 4433-39 Chickering Ave., Cincinnati, O. "Red Cross."

Northwestern Chemical Co., 785 State St., Marietta, O. (See page 277.)

Page-Lester Co., 2644 Indiana Ave., Chicago, Ill. "Tite-Wad."

Perfectfix Rubber Co., Greenbay Rd., Milwaukee, Wis. "Henry's."

Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn.

Pluggum—See Miller Rubber Co.

Quaker City Rubber Co., 629 Market St., Philadelphia, Pa. "Quakerdo."

Quakerdo—See Quaker City Rubber Co.

Red Cross—See National Rubber & Specialties Co.

Rie-Nie—See Durkee-Atwood Co.

S-V—See Williams Mfg. Co.

St. Louis Rubber Cement Co., 3046 Lambdin Ave., St. Louis, Mo.

Standard Tire Filler Co., 1400 Broadway, New York, N. Y. "Boska."

Stickfast—See American Rubber & Tire Co.

Swanson Supply Co., 2124 Westlake Ave., Seattle, Wash.

Tingley & Co., Chas. O., Ross St. & St. Geo. Ave., Rahway, N. J. "C. O. T. Gum Gum."

Tire-Doh—See Atlas Auto Supply Co.

Tire-Tite—See Vul-Tex Mfg. Co.

Tite-Wad—See Page-Lester Co.

Treado Mfg. Co., 42 Dwight St., Springf Mass.

Two in One—See Van Cleef Bros.

United States Tire Co., 1790 Broadway, N York, N. Y.

Van Cleef Bros., 7709-11 Woodlawn Ave., C cago, Ill. "Two in One."

Vul-Tex Mfg. Co., 140 E. Lake St., Minnea lis, Minn. "Tire-Tite."

Williams Mfg. Co., 1800 Carman St., Ca den, N. J. "S-V."

Wonder Worker—See Hall-Thompson Co.

Young Rubber Products Co., St. Louis, M "Ev-R-Wear."

COMPOUNDS, Valve Grinding

(Specially prepared abrasive compounds for grinding engine valves)

Baum's Castorine Co., 104 N. George S Rome, N. Y.

Boyer Chemical Laboratory, 940 N. Clark S Chicago, Ill.

Bridgeport Wood Finishing Co., New Milfo Conn. "Lithowite."

Carborundum Co., Niagara Falls, N. Y.

Clover Mfg. Co., 503 Main St., Norwal Conn. (See page 283.)

Cook, Geo. E., 2822 Broadway, New Yo N. Y.

Diamond—See Hall-Thompson Co.

Durkee-Atwood Co., 40 Wilder St., Minn apolis, Minn. "Rie-Nie."

Dutch—See Van Cleef Bros.

E-Fec-Tiv—See Permatite Mfg. Co.

Empire Specialty Co., E. Orange, N. "Rapidcut."

E. Z.—See International Mfg. & Sales Co.

Graham Roller Bearing Co., Coudersport Pa. (See page 283.)

Grindan Mfg. Co., Albany, N. Y.

Hall-Thompson Co., Dept. A, Hartfor Conn. "Wonder Worker," "Quick Kut "Diamond." (See page 227.)

Hollingshead Co., R. M., 112 N. Ninth S Camden, N. J. "Whis."

International Mfg. & Sales Co., 6304 Walla St., Chicago, Ill. "E. Z.," "Peerless "X. L."

Jiffy—See Re-Nu-R Products Co.

Johnson & Son, S. C., 1012 16th St., Racin Wis.

Lightning Mfg. Co., Cornish Flat. N. H.

Lins Mfg. Co., W. R. (Roxborough), Phil delphia, Pa. "Linsco."

Linsco—See Lins Mfg. Co.

Lithowhite—See Bridgeport Wood Finishi Co.

M. & M. Mfg. Co., 7447 S. Chicago Ave Chicago, Ill. (See page 1205.)

Manifold Heater Co., 30 Main St., Cortlan N. Y. "Corasco."

Mirrolike Mfg. Co., 203 Eighth St., Lon Island City, N. Y.

Mohawk Grinding Paste Mfg. Co., Albany N. Y.

Monarch Auto Specialties Co., 1211-13 Cly bourn Ave., Chicago, Ill.

Nation Co., 332 W. 16th St., Los Angele Cal. (See page 1141.)

National Valgrinok Co., 195 Church St., New ton, Mass. "Valgrinok."

Nock Co., Geo. W., 1304-06 Race St., Phila delphia, Pa. (Sole distributors for Purfe Mfg. Co., Philadelphia, Pa.)

Norwesco—See Northwestern Chemical Co.

Northwestern Chemical Co., 785 State St. Marietta, O. "Norwesco." (See page 277.)

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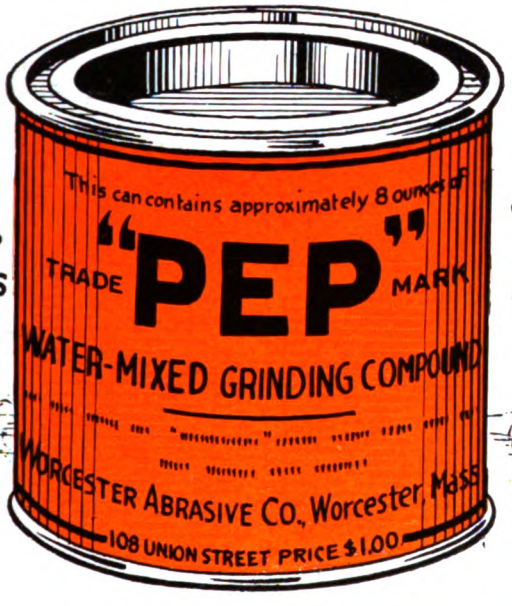
INSIST ON THIS YELLOW CAN

PUTS PEP AND POWER INTO MOTORS



ONE GRADE FOR ALL JOBS

The non-lubricating grinding compound that "Does the Best Job in the Shortest Time"

"PEP" contains no oil whatever. There is nothing in its paste-like mixture to retard the quick action of the abrasive.

"PEP" has a peculiar smooth-cutting property that cannot be found in any other grinding compound.

With "PEP" *one* grade does *all* the work. With other grinding compounds two separate grades, one for cutting and one for finishing, are usually necessary.

When the grinding is done the valve seats are wiped with damp cloths; that's all.

But the result is—valve seats of glasslike smoothness, true and perfect in fit.

For quick and profitable results always use "PEP."

If not stocked by your jobber write us for discounts, giving jobber's name.

Always insist on the yellow can.

WORCESTER ABRASIVE COMPANY, Worcester, Mass.

"Pep"

SEE NEXT PAGE FOR LIST OF JOBBERS

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These Leading Jobbers

Carry "P&P" in Stock

PUTS PEP AND POWER IN MOTORS

ONE GRADE FOR ALL JOBS

ALABAMA
Birmingham....Fulenwider Auto. Sup. Co.
Pascaloosa.....Allen & Jamison Co.

CALIFORNIA
San Jose.....Campbell-Collins Co.
Stockton.....Stockton Auto Sup. Co.

CONNECTICUT
Hartford.....Bushy Motor Sup. Co.
Hartford.....L. L. Ensworth & Sons
Hartford.....L. S. Knoeck & Co.
New Haven.....Horton-Gallo Creamer Co.
New Haven.....L. S. Mersick Co.
Stamford.....Helander Auto Sup. Co.
Waterbury.....M. J. Daly & Sons
Willimantic.....Jordan Hdwre. Co

DELAWARE
Wilmington.....Delaware Hdwre. Co.

GEORGIA
Atlanta.....Bailey & Co.
Atlanta.....Burton-Rogers Co.

ILLINOIS
Chicago.....Auto Tire Sales Co.
Chicago.....The Auto. Sup. Co.
Chicago.....The Beckley-Ralston Co.
Chicago.....New England Mills Co.
Chicago.....Semmes & Davies, Inc.
Decatur.....Morehouse & Wells Co.
Joliet.....Barrett Hdwre. Co.
Joliet.....Robert Meers
Peoria.....Clark Smith Hdwre. Co.
Peoria.....Nat'l Elect. & Auto Sup. Co.
Washington....Washington Auto. Sup. Co.

INDIANA
Evansville.....Nat'l Auto Sup. Co.
Fort Wayne.....Lomont & Co.
Fort Wayne.....Nat'l Mill Sup. Co.
Indianapolis.....W. R. Wheeler Co
South Bend.....The Howard Cranfill Co.
Terre Haute.....Terre Haute Auto. Co.

IOWA
Cedar Rapids.....Cedar Rapids Pump Co.
Cedar Rapids.....C. E. Fawcett
Cedar Rapids.....Western Auto Spec. Co.
Davenport.....Sieg Co.
Dubuque.....Mid-West Auto Sup. Co.
Waterloo.....Repass Automobile Co.

KENTUCKY
Lexington.....L. Gay Strode Co.

LOUISIANA
Monroe.....Motor Sup. Co.

MAINE
Bangor.....N. H. Bragg & Sons
Portland.....James Bailey Co.
Portland.....Emery-Waterhouse Co.
Portland.....Farrar Brown Co.

MARYLAND
Baltimore.....Burton-Rogers Co.
Baltimore.....J. R. Hunt & Co.

MASSACHUSETTS
Boston.....American Mot. Equip. Co.
Boston.....Bay State Hdwre. Co
Boston.....Bigelow & Dwane
Boston.....Burton Rogers Co.
Boston.....Butts & Ordway Co.
Boston.....Chandler & Farquhar
Boston.....Farley-McNeill
Boston.....Green & Swett
Boston.....F. S. Hardy Co.
Boston.....Hub Cycle Co.
Boston....Iver Johnson Sporting Goods Co.
Boston.....Linscott Sup. Co.
Boston.....Malton Spec. Co.
Boston.....Wetmore-Savage Co.
Boston.....John V. Wilson Co.
Fall River.....Congdon & Carpenter Co.
Fall River.....Covel & Osborn
Fitchburg.....Fitchburg Hdwre. Co.
Fitchburg....Iver Johnson Sport. Gds. Co.
Holyoke.....J. G. Riga & Sons Co.
New Bedford.....Jonathan-Handy Co.
Pittsfield.....J. G. Riga & Sons Co.
Springfield.....Malton Spec. Co.
Springfield.....J. G. Riga & Sons Co.
Springfield.....Tarbell-Watters Co
Taunton.....Pierce Hdwre. Co.
Worcester.....Alsten & Goulding Co.
Worcester.....Automotive Equip. Co.
Worcester.....Duncan & Goodell
Worcester....Iver Johnson Sport. Gds. Co.
Worcester.....H. M. Walte Hdwre. Co.

MICHIGAN
Detroit.....Beckley-Ralston Co., The
Detroit.....Peninsula Oil Co.
Detroit.....Watkins & Radcliffe
Flint.....Flint Motor Supply Co.
Kalamazoo.....Frank H. Clay

MINNESOTA
Albert Lea.....W. K. Supply Co
Duluth.....Duluth Auto Sup. Co
Duluth.....Kelly Hdwre. Co.
Duluth.....Kelley How-Thomson Co.
Mankato....Southern Minn. Motor Sup. Co.
Minneapolis....Burd High Comp. Sales Co.
Minneapolis.....Hall Hdwre. Co.
Minneapolis.....Minn. Iron Store Co.
Minneapolis.....F. E. Satterlee Co.
Minneapolis.....Western Motor Sup. Co.
St. Paul.....Adam Decker Hdwre. Co.
St. Paul.....Hackett-Gates Hurty Co.
St. Paul.....P. R. L. Hardenbergh & Co.
St. Paul.....Nicols, Dean & Gregg
St. Paul.....C. J. Smith & Co.
Winona.....Minnesota Harness Co.

MISSOURI
Joplin.....Tri-State Auto Sup. Co.
Kansas City.....The Beckley-Ralston Co.
St. Louis.....Auto Parts Co.
St. Louis.....Schroeter Hdwre Co.

NEBRASKA
Omaha.....Paxton & Gallagher Co.
Omaha.....Powell Sup. Co.

NEW JERSEY
Atlantic City.....Brighton Auto Sup. Co.
Newark.....Automotive Equip. Co.
Newark.....W. T. Crane Car. Hdwre. Co.
Newark.....Economy Auto Sup. Co.
Newark.....Standard Auto Sup. Co.
Paterson.....Geo. A. Myers & Co.

NEW YORK
Albany.....Albany Hdwre. & Iron Co.
Albany.....Alling Rubber Co.
Amsterdam.....Alling Rubber Co.
Auburn.....Alling Rubber Co.
Binghamton.....R. W. Whipple
Buffalo.....Barclay's, Inc.
Buffalo.....Beale, McCarthy & Rogers
Buffalo.....Burton-Rogers Co.
Buffalo.....Jos. Strauss Co.
Buffalo.....Strauss Dilcher Auto Sup. Co.
Elmira.....Barker, Rose & Clinton
Glens Falls.....Alling Rubber Co.
Gloversville.....Alling Rubber Co.
New York.....Auto Trade Sup. Co.
New York.....Bettes & Ehsen
New York.....The Beckley-Ralston Co.
Rochester.....Chapin-Owen Co.
New York.....H. & B. Auto Sales Co.
New York.Hammacher, Schlemmer & Co.
New York.....Lehr Auto Sup. Co.
New York.....Lowe Motor Supply Co.
New York..C. F. Lyngaas Co., Inc (Exp.)
New York.....James Martin
New York.....Miller Auto Sup. Co.
New York.....W. E. Pruden Hdwre. Co.
New York.....Richards Auto Sup. Co.
New York.....Ryan & Hughes
New York.....W. A. Shannahan Co.
New York.....Weaver-Ehling Auto. Co.
New York.....Westchester Accessories Co.
New York.....Whittemore-Sim Co.
Brooklyn.....E. Krieger & Sons
Brooklyn.....Oriental Rubber & Sup. Co.
Brooklyn.....Williams, Belmont & Co.
Rochester.....Mutual Auto Sup. Co.
Rochester.....Sidney B. Roby Co.
Poughkeepsie.....Alling Rubber Co.
Schenectady.....Alling Rubber Co.
Syracuse.....Burhans & Black, Inc.
Syracuse.....Clancy Hdwre. Co.
Syracuse....H. C. Roberts Elec. Sup. Co.
Syracuse.....Syracuse Auto Supply Co.
Utica.....Alling Rubber Co.
Utica.....Jos. F. Coupes Sons Co.
Utica.....David S. Foster & Sons Co.
Utica.....Horracks, Ibbotson Co.
Utica.....Roberts Hdwre. Co.
Troy.....Alling Rubber Co.
Watertown.....Alling Rubber Co.

NORTH CAROLINA
Charlotte.....Ko Mo Sup. Co.
Rocky Mount.....Dixie Auto Sup. Co.

NORTH DAKOTA
Grand Forks.....Auto Sup. Co., Inc.
Fargo.....J. D. Grant Co.
Fargo.....Spaulding Sup. Co.

OHIO
Akron.....Pa. Rubber & Supply Co., The
Akron.....The M. & M. Co.
Canton.....The M. & M. Co.
Cincinnati....Julius J. Banthin Co., The
Cincinnati.....Kruse Hdwre. Co., The
Cincinnati....Pa. Rubber & Sup. Co., The
Cleveland.....Burton Rogers Co.
Cleveland.....M. & M. Co., The
Cleveland....Mau Sherwood Sup. Co., The
Cleveland.....Pa. Rub. & Sup. Co, The
Cleveland.....Philectric Co., The
Columbus.....Pa. Rub. & Sup. Co., The
Toledo.....Pa. Rub. & Sup. Co., The
Toledo.....Roberts-Toledo Co.
Toledo.....Toledo Rubber Co.
Youngstown.....M. & M. Co., The
Youngstown.....Pa. Rub. & Sup. Co., The

PENNSYLVANIA
Allentown.....Motor Accessories Co.
Erie.....Pa. Rub. & Sup. Co., The
Erie.....Strauss Dilcher Auto. Sup. Co.
Harrisburg.....Alexander & Scott
Harrisburg.....Myers Accessories House
Harrisburg.....Standard Auto Sup. Co.
Johnstown.....C. B. Barr
Lancaster.....Herr & Co.
Lancaster.....Queen Auto Sup. Co.
Oil City.....Pa. Rub. & Sup. Co., The
Philadelphia.....Burton Rogers Co.
Philadelphia.....Grim's Auto Sup. Co.
Philadelphia.....J. H. McCullough & Son
Philadelphia.H. C. Roberts Elec. Sup. Co.
Philadelphia....Supplee Biddle Hdwre. Co.
Pittsburgh.....Axwell Equip. Co.
Pittsburgh.....The Beckley-Ralston Co.
Pittsburgh.....Miller & Woodward
Pittsburgh.....Motor Sup. Co.
Pittsburgh....Pittsburgh Auto Equip. Co.
Pittsburgh.....Somers, Fitler & Todd
Reading.....General Auto Sup. Co.
Reading.....Keyser Frz
Reading.....E. S. Youse
Scranton.....Lansing Hdwre. Co.
Wilkes-Barre.Lewis & Bennett Hdwre. Co.
York.....York Auto Sup. Co.

RHODE ISLAND
Providence..Belcher & Loomis Hdwre Co.
Providence.....Congdon & Carpenter Co.
Providence.....Goodby Rankin Co.
Providence.....Millers, Inc.
Providence....Providence Auto Equip. Co.
Providence.....Waite Auto Sup. Co.

SOUTH CAROLINA
Columbia...Carolina Tire & Accessory Co.

SOUTH DAKOTA
Aberdeen.....Spaulding Sup. Co.
Huron.....Huron Auto & Supply Co.
Mitchell.....General Motor Equipment Co.
Sioux Falls.....H. F. Brownell Co.
Sioux Falls.....L. & L. Motor Supply Co.

TEXAS
El Paso.....Automobile Parts Co.
Fort Worth.....Fort Worth Auto Co.

UTAH
Salt Lake City....Inter-Mountain Elec. Co.
Salt Lake City.....Motor Mercantile Co.

VIRGINIA
Norfolk.....Southern Sup. Co.
Norfolk.....W. M. Whaley Co.
Richmond.....J. L. Lindsay & Co., Inc.
Richmond.....E. L. Taylor & Co

WASHINGTON
Tacoma.....Hunt & Mottet Co.

WEST VIRGINIA
Charleston.....Baldwin Sup. Co.
Elkins.....Baldwin Sup. Co.
Huntington
.....Van Zandt Leftwich Auto Sup. Co.
Parkersburg.....H. P. Dils & Son Co.

WISCONSIN
Madison.....L. F. Schaelkopf
Milwaukee.....Julius Andrae & Sons Co.
Milwaukee.....Western Motor Sup. Co.

DISTRICT OF COLUMBIA
Washington.....P. F. May Hdwre. Co.

CANADA
Hamilton.....Wilson Auto Spec. Co.
Toronto.....Canadian General Elec. Co.
Winnipeg..Burd Ring Sales Co. of Canada
Winnipeg.....All branches in
Canada of Canadian Fairbanks Morse Co.

FOREIGN—GREAT BRITAIN
Birmingham..Chas. Churchill & Co., Ltd.
Manchester....Chas. Churchill & Co., Ltd.
Newcastle.....Chas. Churchill & Co., Ltd.
London.....Chas. Churchill & Co., Ltd.
London.....Whitelriars Trading Co.
Glasgow.....Chas. Churchill & Co., Ltd.

PACIFIC COAST REPRESENTATIVE
San Francisco, Cal.The Norman Cowan Co.

WORCESTER ABRASIVE CO., WORCESTER, MASS.

General Sales Office
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New York City

Branch Offices
Boston, Mass.
San Francisco, Cal.

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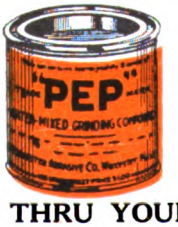

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for Valve Grinding, Cylinder Lapping, Fitting Piston Rings.

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The fastest cutting compound on the market. Lubricating and cutting qualities reduce valve grinding time to a mere trifle.

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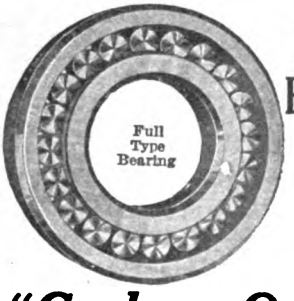

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Manufacturers of

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COMPOUNDS, Valve Grinding (Continued)

O. K.—See Ideal Valve Grinder Co.
Peerless—See International Mfg. & Sales Co.
Pep—See Worcester Abrasive Co.
Perma-Loc Mfg. Co., Wilkes-Barre, Pa. (See page 695.)
Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."
Purfex Mfg. Co.—See Nock Co.
Quick-Kut—See Hall-Thompson Co.
Rapidcut—See Empire Specialty Co.
Red Line, Inc., Grand Rapids, Mich. (See page 1047.)
Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn. "Jiffy."
Rie-Nie—See Durkee-Atwood Co.
S. & P. Mfg. Co., 255 W. 169th St. New York, N. Y. (See page 283.)
Tungsten Mfg. Co., Marshalltown, Ia. (See page 1111.)
Valgrinok—See National Valgrinok Co.
Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."
Volcano Mfg. Co., 923 W. 51st Pl., Los Angeles, Cal.
Whiz—See Hollingshead Co.
Wonder Worker—See Hall-Thompson Co.
Worcester Abrasive Co., Worcester, Mass. "Pep." (See pages 281 and 282 and Book Mark.)
Zip Mfg. Co., Mint Bldg., Denver, Colo.

COMPOUNDS, VULCANIZING—See Compounds, Tire Repair

COMPOUNDS, Welding

Anti-Borax Compounds Co., 1502 Wall St., Fort Wayne, Ind. "E-Z." "Crescent."
Banner—See Cortland Specialty Co.
Cortland Specialty Co., 174-78 Railroad St., Cortland, N. Y. "Banner."
Cortland Welding Compound Co., Cortland, N. Y. "Weld-A-Cast."
Crescent—See Anti-Borax Compounds Co.
E-Z—See Anti Borax Co.
Falls Chemical Works, Cedar Falls, Iowa.
Krembs & Co., 178 N. Green St., Chicago, Ill. "Weldine."
Tip-It, Inc., 120 Broadway, New York, N. Y.
Weld-A-Cast—See Cortland Welding Compound Co.
Weldine—See Krembs & Co.
Whittaker, Clark & Daniels, 250 Front St., New York, N. Y.

COMPOUNDS, WHEEL TIGHTENING—See Compounds, Wood Wheel Tightening

COMPOUNDS, WIND SHIELD—See Compounds, Glass Wind Shield

COMPOUNDS, Wood Wheel Tightening

(For swelling and tightening loose spokes in wood wheels)

Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker," "Never Creak." (See page 227.)
Never-Creak—See Hall-Thompson Co.
Spoktite—See Woodtite Laboratories.
Wonder Worker—See Hall-Thompson Co.
Woodtite Laboratories, Modesto, Cal. "Spoktite."

COMPRESSED AIR ENGINE STARTERS—See Starters, Compressed Air Engine

COMPRESSING TOOLS—See Tools, Valve Spring Lifting and Compressing

COMPRESSION COUPLINGS—See Unions, Tubing

COMPRESSION GAGES—See Gages, Cylinder Compression

COMPRESSION METERS—See Gages, Cylinder Compression

COMPRESSION RELIEF COCKS—See Cocks; also Cups, Spring Key

COMPRESSION TANKS—See Tanks, Vacuum and Compression, Gasoline

COMPRESSION TESTERS—See Gages, Cylinder Compression

COMPRESSING WHISTLES—See Horns, Exhaust

COMPRESSORS, Garage Air

A-F-S Machine Co., 513 S. St. Clair St., Toledo, O.
Aalding—See Franklin Machine Co.
Acme Special Machine Mfg. Co., 14 Sigourney St., Hartford, Conn.
Akron-Williams—See Williams Foundry & Machine Co.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Electric Air Pump Co., 220 Penn. Ave., Pittsburgh, Pa.
American Steam Pump Co., Maple St., Battle Creek, Mich.
Au-To Compressor Co., Wilmington, O.
Bastian Auto Engineering Works, 134 Tabor Rd. (Olney), Philadelphia, Pa. "M. L. B."
Binks—See Star Brass Works.
Black & Decker Mfg. Co., Towson Heights, Baltimore, Md. "Lectroflater."
Brown Beer Pump Co., E. R., 11 Chardon St., Boston, Mass. "Success."
Brunner Mfg. Co., Utica, N. Y. (See pages 286 and 287.)
Caldwell, R. L., 74 Cortlandt St., New York, N. Y. "Quickflate."
Champion—See Cleveland Faucet Co.
Champion Pneumatic Machinery Co., 1402 Michigan Ave., Chicago, Ill. (See page 401.)
Clayton—See International Steam Pump Co.
Cleveland—See National Motor Supply Co.
Cleveland Faucet Co., 708 Frankford Ave. N W., Cleveland, O. "Champion."
Crawford, D. A., Emlenton, Pa.
Curtis Pneumatic Machinery Co., 1500 Kienlen Ave., St. Louis, Mo. (See page 289.)
Davis—See Hinkley Machine Works.
Eureka Air Compressor Co., 242 Glenwood Ave., Bloomfield, N. J.
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Faultless—See Vulcan Engine Co.

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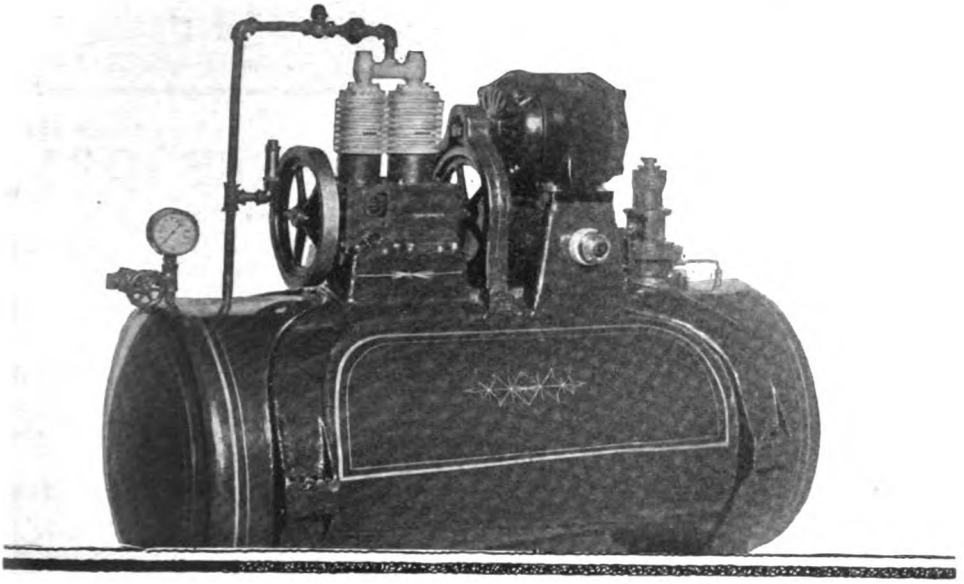

UNION TWIN CYLINDER STATIONARY COMPRESSOR

The above illustration shows our Model 45 AIR COMPRESSOR

This COMPRESSOR is adaptable to heavy truck tire service—it pays to cater to the vast growing truck industry. Trucks are on the job 365 days a year. They consume gasoline and oil in big quantities—so why not make your garage the stopping place for the trucks of your town and those that pass your door.

We manufacture a complete line of AIR COMPRESSORS, both portable and stationary.

Catalogue of complete line mailed upon request.

DISTRIBUTORS

William E. Duff, York, Pa., and Jacksonville, Fla.

Garage Equipment Company, 110-112 South Blount St., Raleigh, N. C.

Guarantee Visible Measure Sales Co., 557 Munsey Bldg., Washington, D. C.

National Oil Equipment Company, 815 Hennepin Ave., Minneapolis, Minn.

Pennsylvania Rubber & Supply Co., Cleveland, Columbus, Cincinnati, Toledo, Akron and Youngstown, Ohio. Also Erie and Oil City, Pa.

Pittsburgh Auto Equipment Co., 5923 Baum Blvd., Pittsburgh, Pa.

Jos. Woodwell Co., 201 Wood St., Pittsburgh, Pa.

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UNION AIR COMPRESSOR COMPANY

Butler, Pennsylvania

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BRUNNER

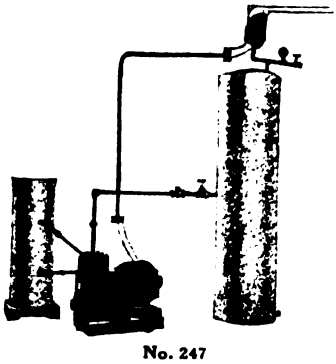
BRUNNER AIR COMPRESSORS

Handled by Leading Jobbers Everywhere

No. 102

No. 102—Double Cylinder Vertical Belt Driven Air Compressor

This compressor is designed for the average garage with line shaft. The bore is 1⅛ in., stroke 2½ in., guaranteed pressure 175 lbs. to the square inch (fitted for higher pressures upon order), capacity from 2¼ to 3 cubic feet free air per minute depending upon speed, splash system lubrication, floor space 6½ in. by 10 in. Each cylinder is fitted with a reliable safety valve which can be readily adjusted for varying pressures which is absolutely dependable under all conditions. A very efficient, durable and economical compressor.



No. 247

No. 247—Heavy Duty Tire Service Outfit

For serving giant pneumatic tires. Especially designed for installation where high pressure in generous volume is frequently required. This outfit is furnished complete with the exception of piping and includes our No. 47 two cylinder water cooled compressor, mounted with motor on cast iron base and operated by a 2 H. P. motor, 80 gallon Brunner heavy duty tank, No. 72 Brunner safety valve, Model B. air gauge, No. 70 horizontal check valve, No. 84 needle valve, No. 82 needle valve with swivel hose connection, two especially ground brass unions, one 25 foot length Brunner special air hose, (¼"); and one automatic tire connection, cooling tank, automatic controller, safety fuses and all necessary fittings included. Capacity 7 cubic feet of free air per minute.

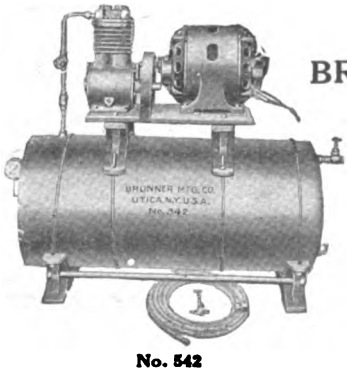
This outfit is large enough to take care of the heaviest air service, is reliable, economical, durable and everything about it is up to Brunner standards.

No. 542—Motor Driven Assembled Outfit

Especially designed for Gasoline filling stations, garage and similar installations where space is limited. Has sufficient capacity for garages housing up to 75 cars. Compressor—Two cylinder, air cooled having a displacement of 2½ cubic feet of free air per minute, ½ H. P. motor capable of starting compressor against 130 lbs. pressure without overloading, extra heavy Brunner Air Tank, 32 gallon capacity. The outfit is complete, including air gauge, check valve, 25 feet ⅜ in. "Resistoil" Air Hose connected to one No. 82 needle valve on one end and having an automatic tire connection on the other.

No. 742—Belt Driven Outfit

This is similar to the No. 542 described in adjoining column but designed for use where exceptionally quiet operation is desired. It is especially recommended for oil stations, small repair shops, accessory stores and other service stations occupying small quarters and where the noise incident to gear drives would be objectionable. It has the same equipment and same capacity as No. 542.



No. 542

BRUNNER MFG. CO.

UTICA, N. Y.

Sales Offices:
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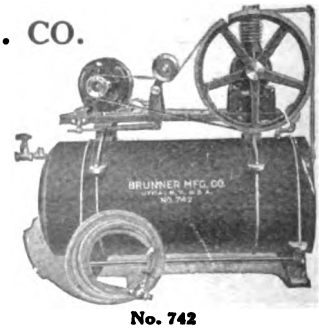
Cincinnati, O.
Kansas City, Mo.



No. 742

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BRUNNER

BRUNNER AIR SERVICE FITTINGS

Handled by Leading Jobbers Everywhere

No. 66

No. 66—Portable Tire Inflator

Designed for inflating tires direct without the aid of a tank and storage system. The compressor is a two cylinder, air-cooled, with accurately ground cylinders, piston and piston rings. The motor ¼ H. P., specially designed, powerful enough to meet all conditions, all accessories, including 20 feet of electric cord and plug, 20 feet Brunner "Resistoil" Air Hose, Tire connection, and air gauge to register tire pressure, makes this outfit complete and ready to operate when taken from the crate.

An exceptionally good outfit for concerns operating a fleet of delivery trucks or salesmen's cars.

No. 72

No. 72—Brunner Safety Valve

Is an absolutely dependable safety valve. It has a ball seat, which is commercially air tight, and may be readily adjusted to blow off at any desired pressure up to 175 lbs. It is intended only as a tank safeguard by preventing higher tank pressure than that for which the valve is set.

Furnished with either ¼ in., ⅜ in. or ½ in. male connection. ⅜ in. supplied unless otherwise specified.

Brunner Model "M" Pressure Controller

Automatically maintains air tank pressures between predetermined limits. It insures a constant supply of air, avoids delays, yet prevents waste of current caused by pumping after pressure in tank reaches that to which safety valve is set. It is very compact, substantially built and all moving parts are protected from dirt and dust.

Air Tanks

Brunner Extra Heavy Galvanized Air Tanks

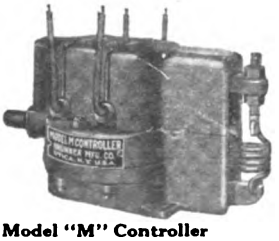
Are made of the very best Open Hearth Flange Steel, are heavily galvanized inside and out. They are made especially for air pressure and meet the most exacting specifications. Tested to 300 lbs.; guaranteed for a working pressure of 150 lbs. For special installations a heavier tank for 200 lb. working pressure may be had in genuine Brunner tank.

Brunner "Resistoil" High Pressure Air Hose

Has an oil resisting inner tube, which in ordinary service will not become porous. It is especially made for air service, is guaranteed for 200 lbs. working pressure and will wear several times longer than ordinary air hose. Sizes ⅛ in., ¼ in. and ⅜ in.

No. 82—Brunner Needle Valve

For use in place of an ordinary air stop cock. One end is threaded to screw into the air line. Other end fitted with a swivel hose coupling to fit ⅛ in., ¼ in. or ⅜ in. hose. This valve is heavily constructed of brass suitable for 200 lbs. air pressure. It is absolutely air tight and is provided with stuffing box on the stem so that it can easily be repacked when necessary. Supplied with either ¼ in. or ⅜ in. male connection, but ⅜ in. is always furnished unless otherwise specified.



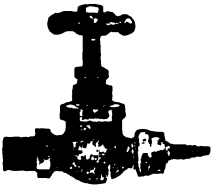
Model "M" Controller

BRUNNER MANUFACTURING CO.

UTICA, N. Y.

Sales Offices: Utica, N. Y., Cincinnati, O., Kansas City, Mo.

Model "A" Gauge



No. 82

"Resistoil" Air Hose

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COMPRESSORS, Garage Air (Continued)

Fero Electric Air Pump Co., 509 Penwood St., Pittsburgh, Pa.

Franklin Machine Co., Main St. Station, Franklin, N. H. "Aalding."

Gardner Governor Co., Fisher Bldg., Quincy, Ill.

Gasco Mfg. Co., Lancaster, Pa. (See page 993.)

General Utility Co., Stock Exchange Bldg., Philadelphia, Pa. (See page 289.)

Gifford Engine Co., Lansing, Mich.

Globe Mfg. Co., 64 Grant St., Battle Creek, Mich.

H-B—See Hobart Bros. Co.

Hale Electric & Engineering Co., Cleveland, O. (See page 159.)

Hartford Machine Screw Co., Hartford, Conn. "Master." (See page 839.)

Haywood Tire & Equipment Co., 1230 N. Capitol Ave., Indianapolis, Ind.

Herz, 182 Locust Ave., New York, N. Y. "Tantem," "Minimax." (See page 713.)

Hinckley Machine Works, E. Lincoln Ave., Hinckley, Ill. "Davis."

Hobart Bros. Co., Box C 103, Troy, O. "H-B." (See page 387.)

Imperial—See Ingersoll-Rand Co.

Ingersoll-Rand Co., 11 Broadway, New York, N. Y. "Imperial."

International Steam Pump Co., 115 Broadway, New York, N. Y. "Clayton."

Jackson Compressor Co., 235 S. Cherokee St., Denver, Colo.

Jansen Machine Co., Theo. W., 741 21st St., Des Moines, Iowa.

Kellogg Mfg. Co., Rochester, N. Y. (See page 747.)

Kewanee Private Utilities Co., Franklin St., Kewanee, Ill.

Lauchin Air Starter & Tire Inflater Co., Green Bay, Wis.

Lectroflater—See Black & Decker Mfg. Co.

Lipman Pump Works, 100 Shirland Ave., Beloit, Wis.

Little Giant—See Orange Machine & Mfg. Co.

Longstroke—See Motor Starter & Air Pump Co.

Lucas-Miner Tool & Production Co., 427 Valley St., Dayton, O.

M. L. B.—See Bastian Auto Engineering Works.

Manley Mfg. Co., York, Pa. (See page 327.)

Master—See Hartford Machine Screw Co.

Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill.

Midvale Machine Works—See Wesco Supply Co.

Minimax—See Herz.

Motor Starter & Air Pump Co., 52-60 Dickerson St., Newark, N. J. "Longstroke." (See page 289.)

Mueller, Wm. F., Farwell Ave. & Brady St., Milwaukee, Wis.

National Brake & Electric Co., Larkin St. & Belleview Pl., Milwaukee, Wis.

Niebling & Co., F. W., Cincinnati, O.

Orange Machine & Mfg. Co., 280 S. Jefferson St., Orange, N. J. "Little Giant."

Pacific Air Compressor Co., 917 S. Grand Ave., Los Angeles, Cal.

Parker Appliance Co., 2619 Vermont Ave., N. W., Cleveland, O.

Pneumatic Appliance Co., Williamson Bldg., Cleveland, O.

Potts Mfg. Co., Mechanicsburg, Pa.

Quickflate—See Caldwell, R. L.

Smith, Irvin C., 1243 W. Pico St., Los Angeles, Cal.

Spicer Mfg. Co., Groton, Conn.

Star Brass Works, 3120 Carroll Ave., Chicago, Ill. "Binks."

Stratton & Bragg Co., Petersburg, Va.

Stroh & Dorman, Barberton, O.

Stuckeman Bros., 330 Liberty Ave., Pittsburgh, Pa.

Success—See Brown Beer Pump Co.

Tandem—See Herz.

Tragesser Steam Copper Works, John, 447-57 W. 26th St., New York, N. Y. (See page 955.)

Union Steam Pump Co., Jefferson & Madison Sts., Battle Creek, Mich.

Union Air Compressor Co., Butler, Pa. (See page 285.)

U. S. Air Compressor Co., 5306 Harvard Ave., Cleveland, O. "Usacos."

United States & Cuban Allied Works, Bradford, Pa.

Universal Pure Air Pump Co., 1607-11 Prairie Ave., Chicago, Ill.

Utica Compressor Co., 319 Hamilton St., Utica, N. Y.

Usacos—See U. S. Air Compressor Co.

Vulcan Mfg. Co., 1511 Cypress Ave., Kansas City, Mo. "Faultless."

Wesco Supply Co., Seventh St. & Clark Ave., St. Louis, Mo. (Sole Distributors for Midvale Machine Works, St. Louis, Mo.)

Westinghouse Air Brake Co., Pittsburgh, Pa.

Williams Foundry & Machine Co., 100 Walnut St., Akron, O. "Akron-Williams."

COMPRESSORS, TRANSMISSION BAND SPRING FOR FORDS—See Tools, Transmission Band Spring Compressing

CONDENSERS, Electric

Magneto Winding Co., 1723 Eighth Ave., Brooklyn, N. Y.

Millwood-Brackett Co., 1601 Locust St., Des Moines, Ia. (See page 1151.)

Wireless Specialty Apparatus Co., Boston, Mass.

CONDENSERS, Radiator

(To be attached to radiator cap to prevent the loss of water or anti-freezing mixture and obviate the necessity of constant refilling of radiator)

Cone-Denser Mfg. Co., 979-81 Central Ave., Minneapolis, Minn.

Masco—See Mayer Auto Specialty Co.

Mayer Auto Specialty Co., 452-54 Ellicott Sq., Buffalo, N. Y. "Masco." (See page 1165.)

CONDUIT, Flexible Car Wiring

(Metal and fabric conduit; see also Tubing, Flexible Metallic)

Alphaduct Co., 136 Cator Ave., Jersey City, N. J.

American Metal Hose Co., Waterbury, Conn. (See page 291.)

American Metal Molding Co., 141 N. J. Railroad Ave., Newark, N. J.

Auto-Brassflex—See National Metal Molding Co.

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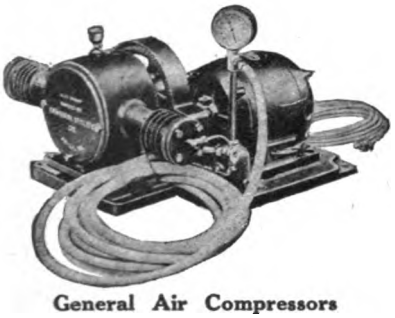
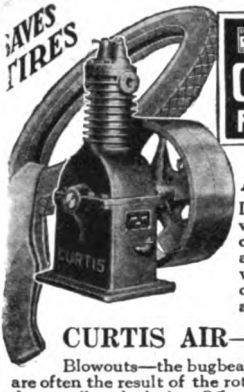
General Lightning Cut Piston Ring



General Air Compressors

Two products of merit which are extensively advertised in the various trade papers and magazines. If interested, write for information.

General Utility Co.
1328-28-30 Ogden St., Philadelphia, Pa.
Export Dept., 17 Battery Place, New York



FREE
CURTIS AIR
FREE FROM OIL

A Friendly Sign

Drivers of cars everywhere seek this sign because it is their assurance of clean, pure air, which means fewer blowouts, greater tire mileage and less repairs.

CURTIS AIR—Free From Oil

Blowouts—the bugbear of every auto driver—are often the result of the rotting of the inner tube, due to oil-soaked air. Offer your customers Curtis Air—*free from oil*—and cash in on the increased patronage that is sure to follow.

Ask Your Jobber

We manufacture several styles, types and sizes of Compressor Outfits. Ask your jobber for prices and complete information, or write us.

Style "X"
Five sizes

Curtis Pneumatic Machinery Co.
1560 Kienlen Ave.
St. Louis, Mo.

Branch Office:
532-N Hudson Terminal
New York City

THE TRUCK TIRE PUMP

That Meets Every Requirement

Designed and built solely for heavy pressure duty

Rigidly tested and strongly endorsed by America's largest tire manufacturers

Will consistently inflate 44x10 inch tires in less than 10 minutes

Not a particle of oil enters the cylinder
Not a particle of oil enters the tires

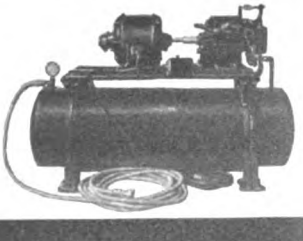
A marvel of power, strength and speed—Immediate deliveries

Necessary on Every Pneumatic Tired Truck

"Long Stroke"

AIR COMPRESSORS

A quality line supreme. Maximum air delivery. Quick Service.
Less power. Less trouble.
Saves time and money for the user
Wins confidence for the dealer
The most compact compressor made. The simplest design
Write for literature and prices, dealer's terms etc.



MOTOR STARTER AND AIR PUMP CO.
52-60 Dickerson Street
NEWARK, N. J.

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CONDUIT, Flexible Car Wiring (Continued)

Autoflex—See National Metal Molding Co.

Auto-Steelflex—See National Metal Molding Co.

Dewes Co., A., 199 Lafayette St., New York, N. Y. (See page 523.)

National Metal Molding Co., Pittsburgh, Pa. "Auto-Steelflex," "Auto-Brassflex," "Autoflex." (See page 849.)

Safety-Armorite Conduit Co., Bailey-Farrell Bldg., Pittsburgh, Pa.

Titeflex Metal Hose Corp., Badger Ave. & Runyon St., Newark, N. J. (See page 293.)

CONES, BALL—See Cups, Ball

CONNECTING ROD ALIGNING JIGS—See Jigs, Connecting Rod Aligning

CONNECTING ROD BABBITTING JIGS FOR FORDS—See Jigs, Main Bearing Connecting Rod Babbitting

CONNECTING ROD BUSHINGS — See Bushings, Bronze

CONNECTING ROD GAGES FOR FORDS —See Gages, Connecting Rod

CONNECTING ROD REAMERS FOR FORDS—See Reamers, Main Bearing and Connecting Rod

CONNECTING RODS—See Rods, Connecting

CONNECTIONS, Air System Tire

Automatic Safety Tire Valve Corp., Long Island City, N. Y. "Loxon."

Gray-Heath Co., 1440 S. Michigan Ave., Chicago, Ill. (See page 741.)

Hansen Mfg. Co., Cleveland, O. (See page 1041.)

Lincoln Products Co., 161 Massachusetts Ave., Boston, Mass.

Loxon—See Automatic Safety Tire Valve Corp.

Romort Mfg. Co.—See Zinke Co.

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Romort Mfg. Co., Oakfield, Wis.) (See pages 310 and 311.)

CONNECTIONS, BATTERY—See Connectors, Battery

CONNECTIONS, Brass Water

American Brass & Iron Co., Detroit, Mich. (See page 205.)

Gray-Heath Co., 1440 S. Michigan Ave., Chicago, Ill. (See page 741.)

Greer, Frederic, 525 W. Van Buren St., Chicago, Ill.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Niagara Brass Mfg. Co., Lockport, N. Y.

Standard Metalwork Co., 92-108 Prospect St., Thompsonville, Conn.

Standard Tool & Mfg. Co., 512 E. Lafayette Blvd., Detroit, Mich.

Whitlock Coil Pipe Co., Hartford, Conn.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

Wilkinson Co., Wm. H., Main St., West Medway, Mass.

CONNECTIONS, Gas Tubing

(Brass Y's, T's and L's for connecting Acetylene Headlights.)

Cox Brass Mfg. Co., Albany, N. Y. (See page 261.)

Gray-Heath Co., 1440 S. Michigan Ave., Chicago, Ill. (See page 741.)

Morgan Mfg. Co., Court St., Keene, N. H. (See page 751.)

Uniform Seamless Wire Co., 71 Peck St., Providence, R. I.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

CONNECTIONS, PUMP—See Connections, Tire Pump

CONNECTIONS, RADIATOR, FOR FORDS —See Hose, Radiator

CONNECTIONS, SPARK—See Joints, Ball

CONNECTIONS, Steering

Balcrank—See Cincinnati Ball Crank Co.

Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind., (Sales Representatives.) (See page 345.)

Cincinnati Ball Crank Co., 90 North St., Cincinnati, O. "Balcrank." (See page 333.)

S & W—See Schweppe & Wilt Mfg. Co.

Schweppe & Wilt Mfg. Co., Mt. Elliott & Conant Aves., Detroit, Mich. "S. & W."

Shaw Mfg. Co., 126 Massachusetts Ave., Boston, Mass. (See page 1133.)

Steel Products Co. (Michigan Plant) 7731 Conant Ave., Detroit, Mich.

CONNECTIONS, STEERING, FOR FORDS —See Links, Steering

CONNECTIONS, THROTTLE—See Joints, Ball

CONNECTIONS, Tire Pump

Acorn—See Stevens & Co.

Acornette—See Stevens & Co.

Adjustable Lighter Co., 18 Pearl St., Newton, Mass. "Larkin."

Automatic Safety Tire Valve Corp., Long Island City, N. Y. "Whistler."

Autoquip Mfg. Co., Rochester, N. Y. (See page 745.)

Bell Pump & Mfg. Co., 534 E. Fort St., Detroit, Mich.

C & S—See Codman & Shurtleff.

Chicago Recording Scale Co., Madison & Sand Sts., Waukegan, Ill. "Cresco."

Codman & Shurtleff, 120 Boylston St., Boston, Mass. "C & S."

Cresco—See Chicago Recording Scale Co.

De Luxe—See Edelmann & Co.

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. "Old Reliable," "De Luxe."

Evertight—See Smith Bros. Garage.

Gleason-Peters Air Pump Co., 334 Classon Ave., Brooklyn, N. Y.

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WATERBURY, CONN.

SALES OFFICES

NEW YORK CHICAGO BOSTON PITTSBURGH

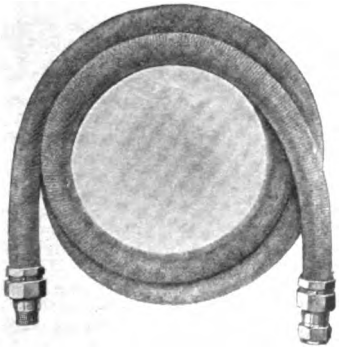
FLEXIBLE METAL TUBING

FOR OILS, GREASE, GASOLINE, EXHAUST AND AIR

CARBURETOR TUBING

Made in Galvanized Steel. Two Patterns. System 1. Asbestos Packed.
U. I. Unpacked, Interlocked.

AMERICAN METAL SPECIAL GASOLINE HOSE



For Gasoline and Paint Spraying. Metal Lined, Rubber and Cotton Covered.
Has the approval of the National Board of Fire Underwriters.

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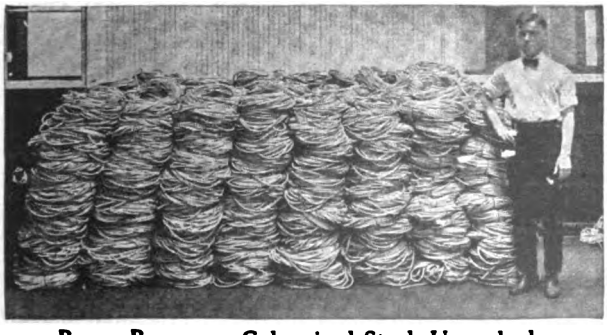

Brass, Bronze or Galvanized Steel, Unpacked.
Asbestos, Cotton Cord or Fibro, Packed.

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CONNECTIONS, Tire Pump (Continued)

Gurnard Mfg. Co.—See Webber & Doyle.
Hansen Mfg. Co., Cleveland, O. (See page 1041.)
Ideal—See Stevens & Co.
Judd & Leland Mfg. Co., Clifton Springs, New York, N. Y. (See page 745.)
Keno—See Stevens & Co.
King, L., Gerald, 21 Pine St., Deposit, N. Y.
Larkin—See Adjustable Lighter Co.
Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill.
Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)
Newton Mfg. Co., Church St., Plainville, Conn.
Old Reliable—See Edelmann & Co.
Perfect—See Youse Co.
Perfection—See Smith Auto Co.
Perfection—See Stevens & Co.
Romort Mfg. Co.—See Zinke Co.
Schrader's Son, A., Brooklyn, N. Y. (See page 768.)
Smith Auto Co., Clyde H., Skowhegan, Me. "Perfection."
Smith Bros. Garage, 467-69 Main St., Melrose, Mass. "Evertight."
Stevens & Co., 375 Broadway, New York, N. Y. "Keno," "Perfection," "Acorn," "Ideal," "Acornette." (See page 1147.)
Thumlock—See Webber & Doyle.
Webber & Doyle, 158 Cabot St., Beverly, Mass. (Sole distributors for Gurnard Mfg. Co., Beverly, Mass.). "Thumlock."
Whistler—See Automatic Safety Tire Valve Corp.
Youse Co., E. S., 46 N. Fifth St., Reading, Pa. "Perfect."
Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Romort Mfg. Co., Oakfield, Wis.) (See pages 310 and 311.)

CONNECTIONS, TRAILER—See Couplers, Trailer

CONNECTIONS, TUBING — See Unions, Tubing

CONNECTOR DRILLS—See Drills and Bits, Battery Strap

CONNECTORS DRY BATTERY—See Connectors Storage Battery

CONNECTORS, Acetylene Lamp

(Flexible Metal Connectors; for Rubber Connectors—See Tubing, Soft Rubber)

Breeze Mfg. Co., 255 South St., Newark, N. J.
Pennflex—See Pennsylvania Flexible Metallic Tubing Co.
Pennsylvania Flexible Metallic Tubing Co., Broad & Race Sts., Philadelphia, Pa.
Titeflex Metal Hose Corp., Badger Ave. & Bunyon St., Newark, N. J. (See page 293.)

CONNECTORS, BELT—See Fasteners, Belt

CONNECTORS, Dry Battery

(See also Terminals, Wire)

Baile" Co., W. J., Newark, N. J. "C. B."
Battery Parts Co., 434 Penn Ave., (Wilkinsburg Sta.), Pittsburgh, Pa.
Belden Mfg. Co., 2300 South Western Ave., Chicago, Ill. (See page 1171.)
Breasnell, J. H., 26 Court St., Brooklyn, N. Y.
C. B.—See Bailey Co.
Chicago Electric Mfg. Co., 2317 S. Halsted St., Chicago, Ill. "Handy."
Fahnestock Electric Co., Meadow St., Long Island City, N. Y.
Fitzgerald Mfg. Co., Railroad Ave., Torrington, Conn. "Perfection," "Standard." (See page 451.)
Handy—See Chicago Electric Mfg. Co.
Harvard Electric Co., 525 W. Van Buren St., Chicago, Ill.
Hi-Po Waterproof Battery Corp., South Norwalk, Conn.
Ideal Clamp Mfg. Co., 198-202 Bradford St., Brooklyn, N. Y. (See page 241.)
Lombardi Motor Car Co., 67-71 Minerva St., Derby, Conn.
Perfection—See Fitzgerald Mfg. Co.
Quick Action Ignition Co., South Bend, Ind.
Shain, Chas. D., Brooklyn, N. Y.
Sherman Mfg. Co., H. B., Battle Creek, Mich. (See page 293.)
Standard—See Fitzgerald Mfg. Co.

CONNECTORS, Electric Lamp

Aid Mfg. Co., 2625-31 Stewart Ave., Chicago, Ill. "Amco." (See page 547.)
Amco—See Aid Mfg. Co.
Brock Rubber Co., A. S., 100 Purchase St., Boston, Mass.
Chicago Electric Mfg. Co., 2317 S. Halsted St., Chicago, Ill. "Handy."
Cole & Co., Henry, 54 Old Colony Ave., Boston, Mass.
Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass.
Douglas & Rudd Mfg. Co., Bronson, Mich.
Faw, J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributors for Culver-Stearns Connectors.) (See page 241.)
Tracto Specialty Co., 161 Massachusetts Ave., Boston, Mass.
Handy—See Chicago Electric Mfg. Co.
Higginson-Gibson Mfg. Co., 76 Atherton St., (Jamaica Plains), Boston, Mass.
Loewus, Edwin H., 304 W. 54th St., New York, N. Y. (See page 1185.)
Metal Specialties Mfg. Co., 338-52 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 547.)
Millwood-Brackett Co., 1601 Locust St., Des Moines, Iowa. (See page 1151.)
Morse, Frank W., 289 Congress St., Boston, Mass. (See page 549.)
Presto—See Metal Specialties Mfg. Co.
Rosco—See Rosen & Co.
Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco."
Smith Mfg. Co., F. A., Rochester, N. Y. (See page 293.)

CONNECTORS, LAMP—See Connectors, Acetylene Lamp; also Connectors, Electric Lamp

CONNECTORS, PUMP—See Connections, Tire Pump

CONNECTORS, Storage Battery

American Storage Battery Parts Co., 650-60 E. 163rd St., Cleveland, O. (See page 1195.)

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The Only Complete Line

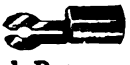
The Sherman Line includes a wire or cable terminal for every purpose in motor car construction.

U. S. Pat. Reissue 14601

Sherman Soldering Lugs

Seamless Copper

Electrically and Mechanically Perfect



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Assortments for the trade, in attractive display boxes. Contain only the best selling styles.

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H. B. SHERMAN MANUFACTURING CO

Battle Creek Michigan

Tite flex

REG U S PAT OFF

All-Metal Tubing

FLEXIBLE without sliding joints.
TIGHT without packing.
TITEFLEX is inherently tight.
GASOLINE HOSE
For garage tanks and supply stations.
GASOLINE AND OIL FEED LINES
For automobiles, trucks and tractors.
TIRE FILLING HOSE
For garage and supply stations.
MUFFLERS AND EXHAUST TUBES
FULL-INTERLOCKED TUBING
SEMI-INTERLOCKED TUBING
For hot air stoves, speedometers, horns and electric wiring conduits.

Let us quote you

Titeflex Metal Hose Corporation

Badger Ave. & Runyon St.
Newark, N. J.

SMITH

Trade Mark

Since commencing business in 1900 our policy has always been to stand back of our product, dealing with our customers as we ourselves would like to be dealt with. In soliciting the patronage of new trade we ask you to come to us with the feeling that you will always receive a square deal.

Smith No. 269
Tire Chain Lock

Prevents all possibility of loss of tire chains through clasp opening up. Packed in neat counter display box lithographed in colors (see illustration), containing 36 sets of locks.

List 25c per set (of 4).

No. 31 Trouble Lamp

Black enamelled outer body with separate solid brass silver plated inner reflector. 6v bulb.

List $2.25.

No. 261A Ford Tail Lamp

Provides continuous electric service. Equipped with 2 bulbs, one 1.5v for dry cell use, and one 18v for magneto. Complete with cable and switch. List $2.25

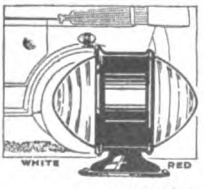
Hard Rubber Connectors

We make a complete line of high grade plugs and sockets. All plugs fitted with special heavy shoulder cap—no breakage. Jobbers and car equipment manufacturers—our prices are most attractive.

SMITH Electric Adaptors for Ford Oil Lamps

Springs in front flange of oil lamp and wired direct to magneto. Controlled by headlight switch. Complete with 18v bulb and cable. No. 266c.
List $1.25

Provides continuous electric service. 18v bulb runs from magneto, 1.5v bulb from dry cell. Complete with cable and switch. No. 2266c.
List $1.75.



No. 75 Parking Lamp

Takes the place of 2 regular head and tail lamps when car is standing, using only about one-fourth amount of current ordinarily consumed. 2½" etched dome lenses, showing white in front, and red in rear. Attaches on rear outside fender.
List $2.00

Write for catalog No. 8

F. A. SMITH MFG. CO., Inc. Rochester, N. Y.

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CONNECTORS, Storage Battery (Continued)

Arthur Storage Battery Supply Co., 2540-42 Cottage Grove Ave., Chicago, Ill. (See page 163.)

Automobile Ignition Supply Co., 1124 Michigan Blvd., Chicago, Ill.

Barcey-Nicholson Co., 2801-19 W. Fort St., Detroit, Mich.

Benson Electric Co., 704 Southwest Blvd., Kansas City, Mo.

Common-Sense—See Peerblow Mfg. Co.

No-Krode Mfg. Co., 514 E. Pike St., Seattle, Wash.

Peerblow Mfg. Co., Leetsdale, Pa. "Common-Sense."

Shonts Co., H. B., 157 W. 54th St., New York, N. Y. (Dealers.) (See page 733.)

Storage Battery Supply Co., 1535 Cherry St., Philadelphia, Pa. (See page 1125.)

CONNECTORS, Storage Battery Charging

(See also Clips, Electrical Test)

Larson & Lundberg, 325 N. Main St., Kewanee, Ill.

No-Krode Mfg. Co., 514 E. Pike St., Seattle, Wash.

CONNECTORS, STORAGE BATTERY REPAIR—See Parts, Storage Battery Repair

CONNECTORS, TRACTOR—See Clevises, Automatic Tractor

CONNECTORS, TRAILER—See Couplers, Trailer

CONSULTING ENGINEERS — See Engineers, Consulting

CONTRACT WORK—See Machine Work; also Screw Machine Products; also Stampings; also Castings; also Patterns

CONTRACTING BRAKES—See Brakes, Expanding and Contracting

CONTRACTING BRAKES FOR FORDS—See Brakes, Emergency Contracting

CONTROL CABLE—See Cable, Flexible Control

CONTROL LEVER BALLS—See Balls, Composition Control Lever

CONTROL LEVERS—See Levers, Brake

CONTROL RODS FOR FORDS—See Rods, Gasoline Cock Control

CONTROLLERS, Electric Motor

(For varying speed of electric vehicles)

Cutler Hammer Mfg. Co., 390 St. Paul Ave., Milwaukee, Wis. "I-C."

General Electric Co., Schenectady, N. Y. (See page 793.)

I-C—See Industrial Controller Co.

Industrial Controller Co., 886 Greenbush St., Milwaukee, Wis.

Western Electric Co., 463 West St., New York, N. Y.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

CONTROLLERS, RADIATOR TEMPERATURE FOR FORDS—See Covers, Automatic Radiator

CONTROLLERS, Storage Battery

(For mounting on the Instrument Board to automatically reduce the charging rate if too high)

Battery Appliance Corp., 1 E. 49th St., New York, N. Y. "G. B. C."

G. B. C.—See Battery Appliance Corp.

CONTROLLERS, Vulcanizer Steam Pressure

(Automatic valve to regulate the flow of gas to the burner on a steam vulcanizer and so control the steam pressure)

Alliance Controller Co., Main St., Alliance, O.

Bacon Vulcanizer Mfg. Co., 4065 Hollis St., Oakland, Cal.

Barton Mfg. Co., 800 N. Saginaw St., Flint, Mich. "Simplex."

Simplex—See Barton Mfg. Co.

CONTROLS, Auxiliary Tractor

(Auxiliary or extension control to permit operation of tractor from seat of implement)

Cherokee Guide Co., Cherokee, Iowa.

CONTROLS, CARBURETOR — See Controls, Dash and Steering Columns

CONTROLS, CARBURETOR, FOR FORDS —See Controls, Dash Carburetor

CONTROLS, Clutch, for Fords

(Attachment for defining or indicating the neutral position of the clutch)

Lewi Clutch Control Co., 296 Lark St., Albany, N. Y.

Norton, Frank W., 322 Third Ave. S., Minneapolis, Minn.

Shannon & Co., John, Stonington, Conn.

CONTROLS, Dash Carburetor for Fords

(For facilitating adjustment of Carburetor or for operating choker from seat)

D. & B.—See Harrington Co.

Harrington Co., O. C., 4138 Fillmore St., Chicago, Ill. "D. & B."

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representative for Porter, Inc., San Diego, Calif.) (See page 688.)

Nance Mfg. Co., 1348 N. Clark St., Chicago, Ill.

Porter Inc., See Jonas, C. N. & F. W.

Porter Products Corp., 670 Keith Theatre Bldg., Syracuse, N. Y. (See page 599.)

Standard Thermometer Co., 65 Shirley St., Roxbury, Mass. (See page 883.)

Warner Carburetor Control Co., 8 E. Broad St., Columbus, O.

CONTROLS, Dash and Steering Column Carburetor

(For changing adjustment of carburetor from seat or operating choker for starting; See also Carburetors)

Atkins Co., E. G., 26 E. Sixth St., Mansfield, O.

Breeze Mfg. Co., 355 South St., Newark, N. J.

CONTROLS, STEERING COLUMN — See Controls, Dash and Steering Column Carburetor

CONTROLS, TRACTOR — See Controls, Auxiliary Tractor

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Trade Mark
REG. B.B.&B.CO.

BUNTING quality begins with the very atoms in a Babbitted Bearing.

The Bunting Brass & Bronze Co.

737 Spencer St., Toledo, O.

New York	Chicago	Cleveland
Grand Central Palace	722 S. Mich. Blvd.	1362 E. Sixth St.

Bronze Bushings and Bearings
Cored and Solid Bars

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CONVERTERS, Chassis

(For connecting standard cars for truck and tractor purposes; for converters for Ford cars—See Converters, Chassis, for Fords.)

Ames Co., F. A., 401 W. Fourth St., Owensboro, Ky. "Ameston."

Amesbury—See Jackson Motor Car Co.

Ameston—See Ames Co.

Barber Motor Corp., 47-49 Lincoln Pl., Brooklyn, N. Y.

Burlington Motor Truck Co., 1919 W. 19th St., Chicago, Ill.

Burman, Chas. H., 3074 Broadway, Oakland, Cal.

Cole Truckmobile Co., 408-10 Laflin St., Chicago, Ill.

Dearborn Truck Co., Chicago, Ill. "Smith." (See page 49.)

E. & W. Mfg. Co., Oregon St., Milwaukee, Wis. "Three-in-One." (See page 297.)

Fitzall—See Hudford Co. of Chicago.

Goldman Auto Co., 1010 Folsom St., San Francisco, Cal.

Guaranteed Tractors, Transportation Bldg., Chicago, Ill.

Guaranty Motors Co., Cambridge, Mass. (See page 471.)

Hedden Place Machine Co., East Orange, N. J. (See page 1077.)

Hewitt-Ludlow Auto Co., 901-51 Indiana St., San Francisco, Cal.

Hoover Wagon Co., York, Pa.

Hudford Co. of Chicago, 1446-48 S. Wabash Ave., Chicago, Ill. "Fitzall."

Illinois Form-A-Tractor Co., Old Colony Bldg., Chicago, Ill.

International Auto-Tractor Corp., 489 Fifth Ave., New York, N. Y. "Wales."

Iowa Motor Truck Co., Ottumwa, Iowa.

Keystone Motor Truck Corp., 42nd & Chestnut Sts., Philadelphia, Pa. "Truxton." "Unitrux."

Mars Mfg. Co., Yakima, Wash.

No-Chain Truck Unit Co., 3302-04 Lawton Ave., St. Louis, Mo.

Partford—See Partlow-Jenkins Motor Car Co.

Partlow-Jenkins Motor Car Co., 219-23 E. Market St., Indianapolis, Ind. "Partford."

Phenix Truck Makers, 4948 Bloomingdale Rd., Chicago, Ill.

Rayford Unit Co., Second St. & Indiana Ave., Philadelphia, Pa.

Six Wheel Truck Co., Fox Lake, Wis.

Smith—See Dearborn Truck Co.

Three-in-One—See E. & W. Mfg. Co.

Truxton—See Keystone Motor Truck Corp.

Union Truck Co., 250 W. 54th St., New York, N. Y.

Unitrux—See Keystone Motor Truck Corp.

Victor Truck Co., 319 Main St., St. Joseph, Mich.

Waco Mfg. Co., 705 Delaware St., Kansas City, Mo.

Wales—See International Aute-Tractor Corp.

Western Truck Attachment Co., 1510 11th Ave., Seattle, Wash.

Woodward & Rowe, 323 Van Ness Ave., San Francisco, Cal.

CONVERTERS, Chassis, for Fords

(For converting the Ford chassis for truck and tractor purposes; for converters for other cars—See Converters, Chassis.)

Adam, Hector C., 44 Whitehall St., New York, N. Y. "Carimore."

Adapto—See Geneva Tractor Co.

Affordable Motor Truck Corp., 1154-58 N. 16th St., Omaha, Neb. (See page 297.)

American Farm Machinery Co., 3353 University Ave., Minneapolis, Minn. "Ford-A-Tractor."

Ames Co., F. A., 401 W. Fourth St., Owensboro, Ky. "Amesbilt."

Amesbilt—See Ames Co.

Amesbury—See Jackson Motor Car Co.

Ameston—See Ames Co.

Arnold Motor Car Co., 191-207 Paterson St. Paterson, N. J.

Auger Bros. Mfg. Co., Minneapolis, Minn.

Auto-Motive Tractor Corp., Frederick, Md. "S. A. T."

Auto Pull—See Wedge Implement Co.

Axleford Truck Co., 7311 Crandon Ave., Chicago, Ill.

Barber Motors Corp., 47-49 Lincoln Pl., Brooklyn, N. Y.

Blount Carriage & Buggy Co., 89 S. Forsythe St., Atlanta, Ga. "Ferguson."

Burlington Motor Truck Co., 1919 W. 19th St., Chicago, Ill.

Burman, Chas. H., 3074 Broadway, Oakland Cal.

Camelford—See Maremont Mfg. Co.

Carimore—See Adams, Hector C.

Comdelcar—See Longford Co. of America.

Dearborn Truck Co., Chicago, Ill. "Smith." (See page 49.)

Diefenderfer Corp., A. J., 410 W. 52d St., New York, N. Y. "Hay Dee."

EZE—See Hudford Co. of Chicago.

E. & W. Mfg. Co., Oregon St., Milwaukee, Wis. "Three-in-One." (See page 297.)

Feeney Mfg. Co., Washington St. & Ohio Ave., Muncie, Ind.

Ferguson—See Blount Carriage & Buggy Co.

Flexo—See Hudson Motor Specialties Co.

Ford-A-Tractor—See American Farm Machinery Co.

Franklin 2 Way Converter Co., Herald Bldg., Chicago, Ill.

Geneva Tractor Co., 8 Factory Row, Geneva, O. "Adapto."

Goldman Auto Co., 1010 Folsom St., San Francisco, Cal.

Greb Co., 195 State St., Boston, Mass. "Grebford." (See page 743.)

Grebford—See Greb Co.

Guaranteed Tractors, Transportation Bldg., Chicago, Ill.

Guaranty Motors Co., Cambridge, Mass. (See page 471.)

Hay Dee—See Diefenderfer Corp.

Hedden Place Machine Co., East Orange, N. J. "Stevenson." (See page 1077.)

Hendricks—See Prescott Co.

Hewitt-Ludlow Auto Co., 901-51 Indiana St., San Francisco, Cal.

Hoover Wagon Co., York, Pa.

Hudford Co. of Chicago, 1446-48 S. Wabash Ave., Chicago, Ill. "EZE."

Hudson Motor Specialties Co., 1934 Arch St., Philadelphia, Pa. "Flexo."

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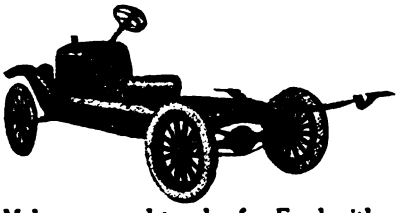
Profit by Doubling the Capacity of Your Ford



Makes a speed truck of a Ford without any change in Ford mechanism. No change in regular Ford engine speed. Heavy, square spoke wheels—with brake drums—fitted with hubs ready for mounting. Extra heavy ball bearings—giving double set of bearings, taking weight and strain off rear axle. Highest quality springs. Castings made of malleable iron. Guaranteed for one year.

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E. & W. Truck Attachments

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Internal Gear and Worm

Drive are sold with body and cab.

The E. & W. makes a heavy duty truck of any car, from a Ford to a Pierce-Arrow.

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"Superbestos" Asbestos Clutch Disc Facings
"Holdwell" Ford Transmission Lining
"Rattleproof" Ford Transmission Lining
"Pylox" Waterproof Automotive Covers
"Mibroco" Asbestos Spark Plug Yarn
"Ronuk" Asbestos Metallic Red and Black Sheet Packing
"Wabash" Asbestos Valve Stem Packing

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Manufacturers Automotive Products
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Plant and Works—Wabash, Indiana

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CONVERTERS, Chassis, for Fords (Continued)

Illinois Form-A-Tractor Co., Old Colony Bldg., Chicago, Ill.

Indestructible Wheel Co., Lebanon, Ind.

Iowa Motor Truck Co., Ottumwa, Iowa.

Ita Manufacturers, Glen Ellyn, Ill.

Jewett Truck Attachment Co., S. William St., Newark, O.

Jiffy—See Northfield Iron Co.

Keystone Machine Co., 154 N. Beaver St., York, Pa. "Multa-Power."

Keystone Motor Truck Corp., 42d & Chestnut Sts., Philadelphia, Pa. "Truxton," "Unitrux."

Lakeside Motor Truck Co., 2210 S. Michigan Ave., Chicago, Ill.

Longford Co. of America, 80 Charles River Rd., Cambridge, Mass. "Comdelcar."

Maremont Mfg. Co., 916-18 Wabash Ave., Chicago, Ill. "Camelford." (See page 297.)

Mars Mfg. Co., Yakima, Wash.

Multa-Power—See Keystone Machine Co.

No-Chain Truck Unit Co., 3202-04 Lawton Ave., St. Louis, Mo.

Northfield Iron Co., Jiffy Bldg., Northfield, Minn. "Jiffy."

Odell One-Ton Truck Attachment Co., 541 Peachtree St., Atlanta, Ga.

Olin Gas Engine Co., 10-16 Lock St., Buffalo, N. Y.

Olson—See Swedish Crucible Steel Co.

P. B. B.—See Greb Co.

Partford—See Partlow-Jenkins Motor Car Co.

Partlow-Jenkins Motor Car Co., 319-23 E. Market St., Indianapolis, Ind. "Partford."

Phenix Truck Makers, 4943 Bloomingdale Rd., Chicago, Ill.

Prescott Co., Sumner K., 403 Occidental Ave., Seattle, Wash. "Hendricks."

Rayford Unit Co., Second St. & Indiana Ave., Philadelphia, Pa.

Robinson Motor Truck Co., 141 N. Ninth St., Minneapolis, Minn. "Utility."

S. A. T.—See Auto-Motive Tractor Corp.

Selden Mfg. Co., 41-61 Selden Ave., Detroit, Mich.

Smith—See Dearborn Truck Co.

Stevenson—See Hedden Place Machine Co.

Swedish Crucible Steel Co., Butler Ave. & G. T. R. R., Detroit, Mich. "Olson."

Three-in-One—See E. & W. Mfg. Co.

3 P Auto Tractor Co., 512 E. Fourth St., Davenport, Ia.

Truxton—See Keystone Motor Truck Corp.

Union Truck Co., 250 W. 54th St., New York, N. Y.

United Auto Dealers Mfg. Co., 931-43 Bergen St., Brooklyn, N. Y.

Unitrux—See Keystone Motor Truck Corp.

Utility—See Robinson Motor Truck Co.

Victor Truck Co., 319 Main St., St. Joseph, Mich.

Waco Mfg. Co., 705 Delaware St., Kansas City, Mo.

Wayne Works, 16th & North F Sts., Richmond, Ind.

Wedge Implement Co., 414 S. Third St., Minneapolis, Minn. "Auto Pull."

Weihaupt-Savage Co., 308 S. Fourth St., La Crosse, Wis.

Western Truck Attachment Co., 1510 11th Ave., Seattle, Wash.

Will-Holl—See Wilson-Holland Mfg. Co.

Wilson-Holland Mfg. Co., Gratiot Ave. & French Rd., Detroit, Mich. "Will-Holl."

Wiseman-Elliott Mfg. Co., El Paso, Tex.

Woodward & Rowe, 323 Van Ness Ave., San Francisco, Cal.

Xtend-A-Ford Co., 1610 Glenwood Ave., Philadelphia, Pa.

CONVERTERS, Top, for Fords

(Attachment to convert old style tops to one-man tops)

Geissel & Sons, A., 485-87 N. Third St., Philadelphia, Pa.

Pennypacker Mfg. Co., 1004 Michigan Ave., Chicago, Ill.

Scott Co., Geo. W., 1831 E. 55th St., Cleveland, O.

CONVERTERS, TRUCK—See Converters, Chassis

COOLERS, WATER—See Radiators, Water Cooling

COOLING FANS—See Fans, Radiator

COPPER CASTINGS—See Castings, Bronze and Brass

COPPER GASKETS—See Gaskets, Metallic

COPPER GASKETS FOR FORDS—See Gaskets, Cylinder Head

COPPER HAMMERS—See Hammers, Brass and Copper

COPPER MALLETS—See Hammers, Brass and Copper

COPPER MELTING FURNACES—See Furnaces, Brass and Copper Melting

COPPER RIVETS—See Rivets, Brass

COPPER, ROD—See Brass, Sheet

COPPER, SHEET—See Brass, Sheet

COPPER, TUBE—See Tubing, Brass

CORD, Airplane Rubber

Dural Rubber Corp., Maple Ave., Flemington, N. J.

Rusco—See Russell Mfg. Co.

Russell Mfg. Co., 508 Russell Ave., Middletown, Conn. "Rusco." (See page 121.)

United States Tire Co., 1790 Broadway, New York, N. Y. "Usco."

Usco—See United States Tire Co.

Whitely Exerciser Co., 36 Vesey St., New York N. Y.

Wood Elastic Web. Co., J. W., Stoughton, Mass.

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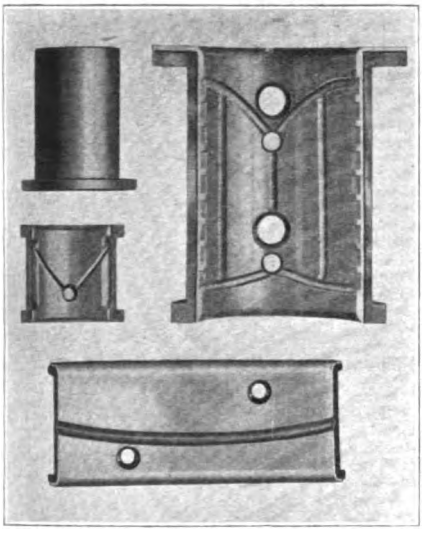

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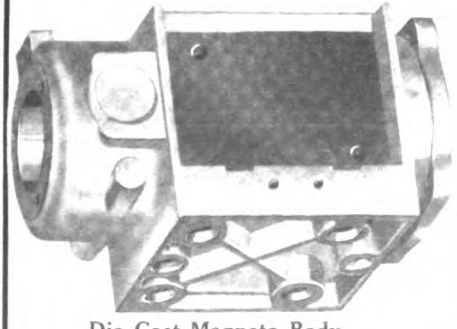

Die Cast Magneto Body.

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CORD, COACH—See Lace, Coach

CORD, RUBBER—See Cord, Aeroplane Rubber

CORE COMPOUNDS—See Compounds, Core

CORE HOLE PLUGS—See Plugs, Core Hole

CORED BARS—See Metals, Bearing

CORES, SPARK PLUG—See Mica; also Porcelain

CORES, TIRE VULCANIZING—See Molds, Tire Vulcanizing

CORK, Brake and Clutch Insert

Armstrong Cork Co., 124 23rd St., Pittsburgh, Pa. (See page 449.)

Cork Insert Co., 164 Federal St., Boston, Mass.

Diamond Cork Co., 59 Pearl St., New York. N. Y.

Mundet & Son, L., King, Ferris & Sullivan Sts., Brooklyn, N. Y.

Paddock Cork Co., 1209-17 De Kalb Ave., Brooklyn, N. Y. (See page 301.)

CORK FLOATS—See Floats, Cork

CORK GASKETS FOR FORDS—See Gaskets, Cork

CORK PULLEY COVERS—See Covers, Cork Pulley Rim

CORK WASHERS—See Washers, Cork

COST SYSTEM BOOKS—See Books, Accounting

COST SYSTEMS—See Books, Accounting

COTTER PIN PULLERS—See Pullers, Cotter Pin

COTTER PINS—See Pins, Cotter

COTTERS, SPLIT—See Pins, Cotter

COTTON BELTS—See Belts, Endless Fabric

COTTON FELT, UPHOLSTERY—See Moss, Upholstery

COTTON TIRE FABRICS—See Fabric, Cotton Tire

COTTON WASTE—See Waste, Cotton

COTTON WEBBING—See Webbing, Jute and Cotton

COUCHES, REPAIR—See Trucks, Repair

COUNTERBALANCES, Crankshaft, for Fords

Dunn Mfg. Co., 115 N. 15th St., Clarinda, Ia.

COUNTERBORES

Cost Cut Counterbore Co., 74-78 E. Fort St., Detroit, Mich. (See page 301.)

Morse Twist Drill & Machine Co., 163 Pleasant St., New Bedford, Mass.

National Twist Drill & Tool Co., 6522 Brush St., Detroit, Mich.

New Britain Mfg. Co., 5 Harvard St., New Britain, Conn.

Production Tool Co. of America, Le Grande & Foster Aves., Detroit, Mich.

COUPLERS, Tractor

Buller Coupler Co., Hillsboro, Kans.

Curtis Trailer Co., 413-17 20th Ave., N., Minneapolis, Minn.

Ferris—See Ohio Motor Vehicle Co.

Ohio Motor Vehicle Co., Oakview & Nottingham Rd., Cleveland, O. "Ferris."

Reliable Tongue Hitch Mfg. Co., 26 W. Randolph St., Chicago, Ill.

COUPLERS, Trailer

Behlen Trailer Co., Vine & 15th Sts., Cincinnati, O.

Buller Coupler Co., Hillsboro, Kans.

Curtis Trailer Co., 413 W. Broadway, Minneapolis, Minn.

Ekern Bros. Mfg. Co., Flandreau, S. Dak.

Romine Mfg. Co., Goodland, Ind.

Royal Machine Co., Cincinnati, O.

COUPLERS, Trailer, for Fords

Behlen Trailer Co., Vine & 15th Sts., Cincinnati, O.

Buller Coupler Co., Hillsboro, Kans.

Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.

Litehaul—See Puffer-Hubbard Mfg. Co.

Puffer-Hubbard Mfg. Co., 26th St. & 32d Ave., S. Minneapolis, Minn "Litehaul."

Romine Mfg. Co., Goodland, Ind.

COUPLINGS, BELT—See Fasteners, Belt

COUPLINGS, CLUTCH—See Couplings, Motor Boat Clutch

COUPLINGS, COMPRESSION—See Unions, Tubing

COUPLINGS, FLANGE—See Couplings, Motor Boat Flange

COUPLINGS, FLEXIBLE—See Couplings, Motor Boat Flexible

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CORK

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COUPLINGS, Flexible Shaft

(For Universal Joints—See Joints, Universal)

Karge-Baker Corp., Phoenix, N. Y.

COUPLINGS, GENERATOR—See Couplings, Magneto

COUPLINGS, HOSE—See Clamps, Hose

COUPLINGS, Magneto & Generator

Acme Motor Parts Corp., Milwaukee, Wis. (See page 303.)

Bailey Mfg. Co., Union City, Ind.

Beehler Electric Equipment Co., Yuma, Colo.

Clark—See Dexter Co.

Climax Motor Devices, Chagrin Falls, O. (See pages 303 and 565.)

Dexter Co., I. H., 182 Greenwich Ave., Goshen, N. Y. "Clark."

Eisemann Magneto Corp., 32-33d St., Brooklyn, N. Y. "Oldham." (See page 621.)

Hardy—See Thermoid Rubber Co.

Leather Parts Co., 1619-21 Prospect St., Indianapolis, Ind.

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)

Norwalk Auto Parts Co., Norwalk, Conn.

Oldham—See Eisemann Magneto Corp.

Thermoid Rubber Co., Trenton, N. J. "Hardy." (See page 543.)

Uniflex Coupling Co., Lafayette Bldg., Philadelphia, Pa. (Sole Distributors for Thompson Bros., Philadelphia, Pa.)

Universal Motor Co., 39 Ceape St., Oshkosh, Wis.

COUPLINGS, Motor Boat Clutch

List Mfg. Co., E. J., Havana, Ill.

COUPLINGS, Motor Boat Flange

Nilson-Miller Co., 1300-06 Hudson St., Hoboken, N. J.

COUPLINGS, Motor Boat Flexible

Dexter Co., I. H., 182 Greenwich Ave., Goshen, N. Y.

Johnson Machine Co., Carlyle, 52 Main St., Manchester, Conn.

Smith-Serrell Co., West St. Bldg., New York, N. Y.

Uniflex Coupling Co., Lafayette Bldg., Philadelphia, Pa. (Sole Distributors for Thompson Bros., Philadelphia, Pa.)

COUPLINGS, PIPE—See Fittings, Pipe

COUPLINGS, SOLDERLESS—See Unions, Tubing

COUPLINGS, TRACTOR—See Couplers, Tractor

COUPLINGS, TRAILER—See Couplers, Trailer

COUPLINGS, TUBE—See Unions, Tubing

COVERS, Automatic Radiator

(Metal Cover automatically opened or closed by a thermostat.—See also Regulators, Water; also Valves, Water Regulating; also Covers, Metal Radiator.)

Pines Mfg. Co., Dept. E, 408-10 N. Sacramento Blvd., Chicago, Ill. "Winterfront." (See page 1121.)

U. S. E. Corp., 7 W. 61st St., New York, N. Y.

Winterfront—See Pines Mfg. Co.

COVERS, Automatic Radiator, for Fords

(Metal Cover automatically opened or closed by a thermostat.—See also Covers, Metal Radiator for Fords.)

Amco—See American Metals Corp.

American Metals Corp., 1022 E. Michigan St., Indianapolis, Ind. "Amco."

Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich.

Peacock Radiator Guard Co., 837 W. Fort St., Detroit, Mich.

Pines Mfg. Co., Dept. E, 408-10 N. Sacramento Blvd., Chicago, Ill. "Winterfront." (See page 1121.)

Winterfront—See Pines Mfg. Co.

COVERS, Automobile

(For covering automobiles when in the garage)

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 321.)

B. E. Mfg. Co., 18 W. 18th St., New York, N. Y. "Bemco." (See page 321.)

Bemco—See B. E. Mfg. Co.

Brooks Tent & Awning Co., 1655 Arapahoe St., Denver, Colo.

Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.

Cleveland-Akron Bag Co., Cleveland, O. (See page 101.)

Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.

Crown Paper & Bag Co., 405-07 Liberty St., Jackson, Mich.

Dafoe-Eustice Co., 4042 W. Jefferson Ave., Detroit, Mich. "Duk-Bak," "Deco," "Ustus."

Deco—See Dafoe-Eustice Co.

Duk-Bak—See Dafoe-Eustice Co.

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 545.)

Fitzwell—See Niagara Fabric Mfg. Co.

Fulton Bag & Cotton Mills, 330 Wythe Ave., Brooklyn, N. Y. "Shuredry."

Gilbert Mfg. Co., 353 York St., New Haven, Conn.

Goss Co., J. C., 20 E. Woodbridge St., Detroit, Mich.

Kennedy Car Liner & Bag Co., Shelbyville, Ind. (See page 317.)

Landers Bros. Co., Dept A2, Toledo, O. (See page 605.)

Lockwood Mfg. Co., Kansas City, Mo. (See page 323.)

Mikesell Brothers Co., 176-78 N. La Salle St., Chicago, Ill. "Pylox." (See page 297.)

Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 321.)

Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."

Pylox—See Mikesell Brothers Co.

Red Seal—See Schaefer Tent & Awning Co.

Schaefer Tent & Awning Co., Denver, Colo. "Red Seal." (See page 117.)

Schott Bros. Co., Buckeye & Main Sts., West Salem, O.

Shuredry—See Fulton Bag & Cotton Mills.

Ustus—See Dafoe-Eustice Co.

COVERS, Battery, for Fords

Fairbanks Co., New York, N. Y. (Sole Distributors for F-B Electric & Mfg. Co., Detroit, Mich. (See pages 137 to 140.)

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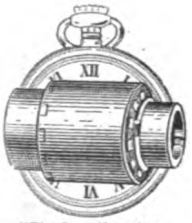
Magneto and Generator COUPLINGS



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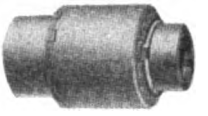
This style coupling possesses a range in timing of 132 positions. The timing can be done accurately in the coupling instead of removing the gear cover or drive gear.

Remember, it is not necessary to remove the magneto when timing is done with this coupling.

The large number of adjustments of this coupling is obtained by Vernier principle; moving both hubs in either direction, the magneto is advanced or retarded 132nd part of the revolution, equaling 2 degrees 43 minutes 38 seconds.

Write us today for complete details, price, etc.



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Save money by placing your orders for these parts with us. Our patented process of manufacture out of stampings enables us to quote attractive prices and give you a lighter and better finished product.

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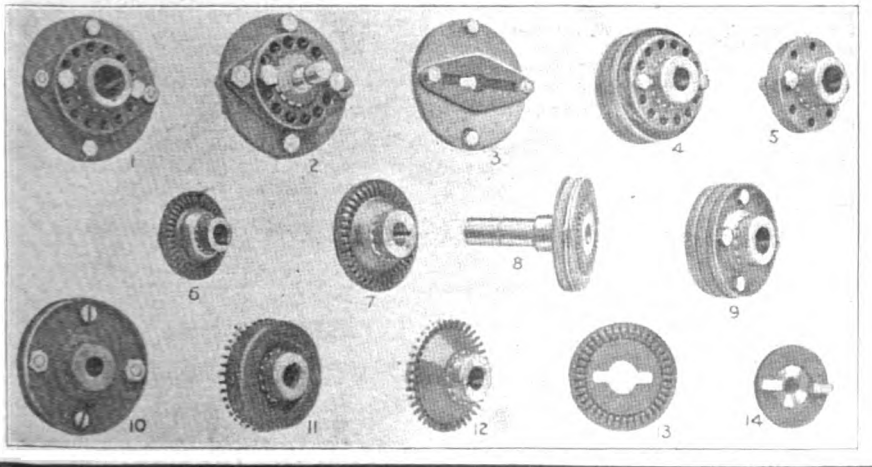

Climax Motor Devices, Chagrin Falls, Ohio.

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COVERS, Battery, for Fords (Continued)

Gasco—See General Auto Specialty Co.
General Auto Specialty Co., 151 Berkeley St., Boston, Mass. "Gasco."

COVERS, CANVAS SHIPPING—See Covers, Paper

COVERS, Cork Pulley Rim

(For covering fan pulleys to prevent belt slipping)

Armstrong Cork Co., 124 23rd St., Pittsburgh, Pa. (See page 449.)

COVERS, Fender

(Fabric covers designed to place over mud guards or fenders to protect them from being scratched when the car is being worked on.)

Anton & Ackermann Co., 132-34 Kansas Ave., Topeka, Kans.
Buob & Scheu, 500-10 Webster St., Cincinnati, O. (See page 325.)
Century Auto Top & Supply Co., 50 E. 26th St., Chicago, Ill.
Lockwood Mfg. Co., Kansas City, Mo. (See page 323.)
Powers Mfg. Co., Waterloo, Ia. (See page 593.)

COVERS, HOOD—See Covers, Radiator

COVERS, JOINT—See Boots, Steering Knuckle

COVERS, Lamp

(Leather or fabric covers for head or side lamps)

B. E. Mfg. Co., 18 W. 18th St., New York, N. Y. "Bemco." (See page 321.)
Bemco—See B. E. Mfg. Co.
Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.
Economy Stay Co., Jefferson City, Mo.
Fitzwell—See Niagara Fabric Mfg. Co.
Gilbert Mfg. Co., 353 York St., New Haven, Conn.
Landers Bros. Co., Dept A2, Toledo, O. (See page 605.)
Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 321.)
Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."
Premier Auto Novelty Mfg. Co., 375 W. Broadway, New York, N. Y.

COVERS, Magneto

(Leather or Fabric Covers)

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 321.)
B. E. Mfg. Co., 18 W. 18th St., New York, N. Y. "Bemco." (See page 321.)
Bailey-Fitzwell Co., 1316 S. Grand Ave., Los Angeles, Cal.
Bemco—See B. E. Mfg. Co.
Campbell—See Perkins-Campbell Co.
Chicago Rawhide Mfg. Co., 1301 Elston Ave., Chicago, Ill.
Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.
Dafoe-Eustice Co., 4042 W. Jefferson Ave., Detroit, Mich. "Duk-Bak," "Deco," "Ustus."
Deco—See Dafoe-Eustice Co.
Detroit Leather Works, 863 E. Lafayette Blvd., Detroit, Mich. (See page 125.)
Duk-Bak—See Dafoe-Eustice Co.
Economy Stay Co., Jefferson City, Mo.
Fitzwell—See Niagara Fabric Mfg. Co.
Gilbert Mfg. Co., 353 York St., New Haven, Conn.
Hager & Son, Chas., 1926 Broadway, New York, N. Y.
Leather Parts Co., 1619-21 Prospect St., Indianapolis, Ind.
Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 321.)
Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."
Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. "Campbell." (See page 317.)
Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.
Springfield Harness Co., 55-59 Dwight St., Springfield, Mass.
Stevens & Bro., A. A., 1224 Wabash Ave., Chicago, Ill.
Sutherland Co., F. L., 189 Beaubien St., Detroit, Mich. (See page 803.)
Ustus—See Dafoe-Eustice Co.

COVERS, Metal Radiator

(Metal Covers for protecting the radiator in cold weather; for Fabric Covers.—See Covers, Radiator; also for Automatic Covers. —See Covers, Automatic Radiator)

Allen Auto Specialty Co., 16 W. 61st St., New York, N. Y. (See page 323.)
Auto Metal Parts Co., 624 Michigan Ave., Chicago, Ill.
Diamond Jay Dee Co., 1400 S. Michigan Ave., Chicago, Ill. (See page 569.)
Hill Insulating & Mfg. Corp., 509 W. 42d St., New York, N. Y. (See page 713.)
Peacock Radiator Guard Co., 423 E. Jefferson St., Detroit, Mich.
Saginaw Sheet Metal Works, 2060 Genesee Ave., Saginaw Mich.
U. S. Auto Equipment Co., Suite 312, Montgomery Bldg., Milwaukee, Wis. (See page 909.)

COVERS, Metal Radiator, for Fords

(Metal Covers for protecting the radiator in cold weather; for Fabric Covers.—See Covers, Radiator; also for Automatic Covers. —See Covers, Automatic Radiator)

Hill Insulating & Mfg. Corp., 509 W. 42nd St., New York, N. Y. (See page 713.)
Peacock Radiator Guard Co., 423 E. Jefferson St., Detroit, Mich.

COVERS, Oil Hole

(Stamped or turned metal dustproof covers for oil holes)

Bay State Stamping Co., 380 Chandler St., Worcester, Mass. "Handy."
Bowen Products Corp., Auburn, N. Y. "Empress." (See page 331.)
Bowen Products Corp., 2760 W. Warren Ave., Detroit, Mich.

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TUCKER'S

Absolutely Dustproof Self Closing

OIL HOLE COVERS

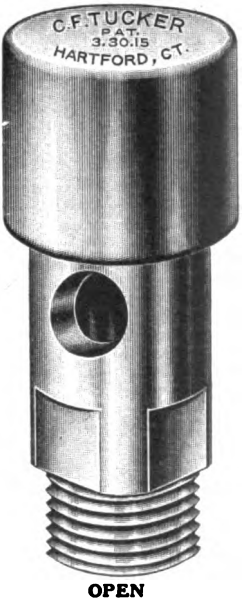
STYLE G FOR

Spring Shackle Bolts, Steering Pins, Radius Rods or any other part of a motor car or commercial truck. Covered by Letters Patent Number 1134025, issued March 30, 1915. Infringements will be followed by suit.

CLOSED

Manufactured in Seven Sizes

No. 22 ¼x32 Pi.
No. 23 $\frac{5}{16}$x32 "
No. 24 ⅜x24 "
No. 25 ⅛" Pipe
No. 26 $\frac{7}{16}$x24 Pi.
No. 27 ½x24 "
No. 29 ¼" Pipe

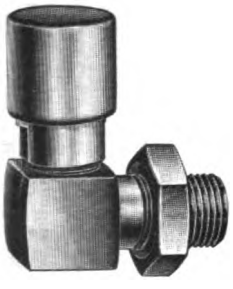


OPEN

TUCKER'S

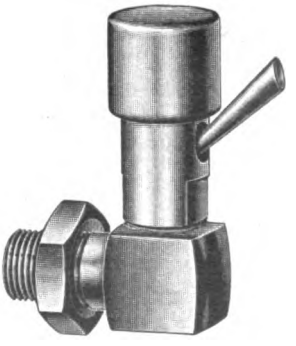
Dustproof

ELBOW OILERS



CLOSED

Style G
With Straight Thread
Lock Nut on ⅛ in. pipe thread shank



OPEN

Send for Catalogue and Samples Specifications for 1921 Solicited

W. H. & C. F. TUCKER
HARTFORD, CONN.

TUCKER STYLE G COVERS BEAR THIS STAMP ON HEAD

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COVERS, Oil Hole (Continued)

Detroit Lubricator Co., 5842-5986 Trumbull Ave., Detroit, Mich.

Empress—See Bowen Products Corp.

Greer, Frederic, 525 W. Van Buren St., Chicago, Ill.

Handy—See Bay State Stamping Co.

Higgins Machine Works, 25 Keystone St., Buffalo, N. Y.

Keeler Brass Co., 251-71 Godfrey Ave., Grand Rapids, Mich.

Long Bros., Broadway & Buckeye St., Kokomo, Ind. "Simplicity."

Simplicity—See Long Bros.

Tucker, W. H. & C. F., Hartford, Conn. (See page 305.)

COVERS, Paper and Canvas Shipping

(For protecting cars during shipment)

Cleveland-Akron Bag Co., Cleveland, O. (See page 101.)

Kennedy Car Liner & Bag Co., Shelbyville, Ind. (See page 317.)

Royal Textile Co., 200 Congress St., Boston, Mass.

Safepack Paper Mills, 727 Atlantic Ave., Boston, Mass.

Seinsheimer Paper Co., York St. & McLean Ave., Cincinnati, O.

United States Tent & Awning Co., 229 N. Desplaines St., Chicago, Ill.

COVERS, PULLEY RIM—See Covers, Cork Pulley Rim

COVERS, Radiator and Hood

(To prevent the water freezing in cold weather)

A & E Auto Top Co., 33-35 E. Cross St., Ypsilanti, Mich. (See page 325.)

Accurate Cover Co., 373 Canal St., New York, N. Y.

Allen Auto Specialty Co., 16 W. 61st St.-New York, N. Y. (See page 323.)

Antidam—See Glover Equipment Co.

Anton & Ackerman Co., 132-34 Kansas Ave., Topeka, Kans.

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 321.)

Ayers & Sons, Wm., Cumberland & Fourth Sts., Philadelphia, Pa.

B. E. Mfg. Co., 18 W. 18th St., New York, N. Y. "Bemco." (See page 321.)

Badger—See Wisconsin Auto Top Co.

Bemco—See B. E. Mfg. Co.

Bliss Auto Top Co., C. P., 1351 Court Pl., Denver, Colo.

Buob & Scheu, 500-10 Webster Ave., Cincinnati, O. (See page 325.)

Campbell—See Perkins-Campbell Co.

Central Auto Top & Leather Co., 419½ N. Capitol Ave., Indianapolis, Ind.

Century Auto Top & Supply Co., 50 E. 26th St., Chicago, Ill.

Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.

Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Frost King."

Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.

Continental Auto Top Mfg. Co., 3900 Washington Ave., St. Louis, Mo.

Co-Zee—See Omaha Auto Top Co.

Crawford Mfg. Co., 211 N. Foushee St., Richmond Va.

Dafoe-Eustice Co., 4042 W. Jefferson Ave., Detroit, Mich. "Duk-Bak," "Deco," "Ustua."

Deco—See Dafoe-Eustice Co.

Detroit Slip Cover Co., 449 E. Canfield Ave., Detroit, Mich. "Pro-tec-Shun."

Doerner & Co., 4127 32d St., Cincinnati, O. "Paragon."

Duk-Bak—See Dafoe-Eustice Co.

Economy Seat Co., 3132-36 S. Canal St., Chicago, Ill. "Esco."

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 545.)

Esco—See Economy Seat Co.

Fitzwell—See Niagara Fabric Mfg. Co.

Fox-Cobe Mfg. Co., 280 9th Avenue, New York, N. Y. "Rad-a-thaw." (See page 1093.)

Frankel Specialties Corp., 356 W. 50th St., New York, N. Y.

Frost King—See Cincinnati Auto Specialty Co.

Gasco—See General Auto Specialty Co.

General Auto Specialty Co., 151 Berkeley St., Boston, Mass. "Gasco."

Genesee Mfg. Co., 516-18 Harrison St., Flint, Mich.

Gilbert Mfg. Co., 353 York St., New Haven, Conn.

Glover Equipment Co., 412 N. Capital Ave., Indianapolis, Ind. "Antidam."

Gordon Co., J. P., 555 N. Fourth St., Columbus, O. "Jack Frost." (See page 319.)

Goss Co., J. C., 20 E. Woodbridge St., Detroit, Mich.

Graesam Auto Co., 258 W. 69th St., New York, N. Y.

Hodes-Zink Mfg. Co., 312 W. State St., Fremont, O. "Sure-Fit."

Holden Mfg. Co., 409 N. Franklin Ave., St. Paul, Minn. "Zero King."

Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributor for Frost King Covers.) (See page 1187.)

Jack Frost—See Gordon Co.

Keystone Canvass Goods & Flag Co., 1012-18 Filbert St., Philadelphia, Pa.

Lockwood Mfg. Co., Kansas City, Mo. (See page 323.)

McKinnon Dash Co., Buffalo, N. Y. (See page 831.)

Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.

Mayhew—See Sutter-Mayhew Co.

Monarch Carriage Goods Co., Cincinnati, O. (See page 407.)

Myar Mfg. Co., 124 E. Fourth St., Little Rock, Ark.

Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 321.)

Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."

Omaha Auto Top Co., 709-11 S. 15th St., Omaha, Neb. "Co-Zee."

Only Grease Gun Co., Newton, Ia.

Paragon—See Doerner & Co.

Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. "Campbell." (See page 317.)

Premier Auto Novelty Mfg. Co., 375 W. Broadway, New York, N. Y.

Prince Auto Fabric Mfg. Co., 4104 Fort Hamilton Ave., Brooklyn, N. Y.

Pro-Tec-Shun—See Detroit Slip Cover Co.

Rad-a-thaw—See Fox-Cobe Mfg. Co.

R. C. Fabric Co., 1383 Bedford Ave., Brooklyn, N. Y.

Samson Auto Top & Equipment Co., 102-05 Fountain St., Providence, R. I.

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THE ZINKE COMPANY

PROVEN AUTOMOTIVE PARTS AND EQUIPMENT

For Passenger Cars—Trucks—Tractors—etc.

A SELLING SERVICE BACKED BY A BIG ORGANIZATION

Established over 13 years

The ZINKE COMPANY sells 94% of the jobbers in the entire United States, Canada, Hawaii, the Philippines, Cuba and various foreign outlets through its big export connections.

The ZINKE COMPANY sells exclusively to jobbers and manufacturers of passenger cars, trucks, tractors, etc., and is equipped to handle the entire output of any factory with which it becomes associated.

The ZINKE COMPANY relieves the manufacturer of a burdensome and expensive selling department. Consider the tremendous value of being able to have your products introduced by an established selling organization directly into the markets that you wish to enter and at a minimum predetermined selling cost.

The ZINKE COMPANY is departmentized and operated after the most modern and approved selling methods. Accumulative value of over 13 years has made the ZINKE COMPANY foremost in its field.

Write for complete details

The Zinke Company

1323-1325 Michigan Ave. **Chicago, U. S. A.**

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THE ZINKE COMPANY

Indiana Head Lamps

These lamps have always been noted for their high quality, modern approved design and general serviceability. Standard finishes are all black and black and nickel.

No. 1119
11¾ in. front
Prop centers 8¼ in.

No. 1020
10¼ in. front
Prop centers 7 in.

No. 916
9¼ in. front
Prop centers 7 in.

No. 916-F
9 3/16 in. front
Single stem prop for late model Ford only

No. 415-F
4½ in. front
Semaphore lens
For late model Ford

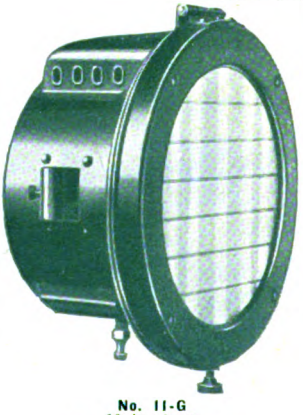
No. 415
Bracket to fit flat or round props

No. 32
3¼ in. front
Red semaphore lens
Bracket will fit either flat or round props

No. 32-F
Same as above with prop for late model Ford

No. 32-BB
Same as above
Props for Buick cars

No. 32 S. O.
Special double bulb tail light assembly for Ford cars

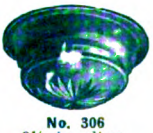


No. 11-G
10 in. front
Prop centers 8¼ in.
Heavy Duty Truck Type—Gas

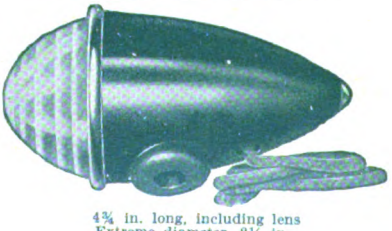
No. 11-E
10 in. front
Prop centers 8¼ in.
Heavy Duty Truck Type—Electric

No. 9
9 in. front
Prop centers 7 in.

No. 10
10 1/16 in. front
Prop centers 8¼ in.



No. 306
3¼ in. diam.
3 in. frosted star glass lens



4¾ in. long, including lens
Extreme diameter, 2½ in.
Beehive moonstone lens

No. 717
7⅛ in. front
Universal bracket
Fits all windshields
3 in. mirror

Information in regard to additional types of lamps will be furnished

MANUFACTURERS

INDIANA LAMP COMPANY, Connersville Ind.

SALES DEPARTMENT

To the Jobber
The Zinke Company, No. 1323 Michigan Ave., Chicago, Ill.

To the Manufacturer
The American Distributing Co., No. 60. Kresge Building, Detroit, Mich.

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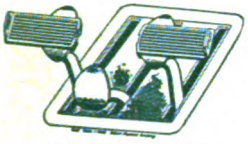
THE ZINKE COMPANY

UTILITY AUTOMOTIVE PRODUCTS



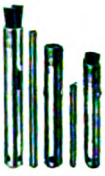
Price Per Set, $1.25

Utility Pedals for Fords

"The absolutely necessary accessory for Fords" sums up in the words of the user the reasons for the popularity and fast selling qualities of Utility Pedals for Fords.

They transform small smooth Ford clutch and brake pedals into standard size, comfortable pedals. Heavy rubber pad and side flange prevent slippage. Instantly attached. No holes to drill. Made of pressed steel, black enamel finish. Price, per set, $1.25.

UTILITY



UNIVERSAL WRENCH SET

Will fit automatically any nut of any size or shape. No screws to manipulate or parts to get out of order. All the advantages of expensive 16-piece socket wrench sets. Price, only $3.50.

UNIVERSAL RIM WRENCH

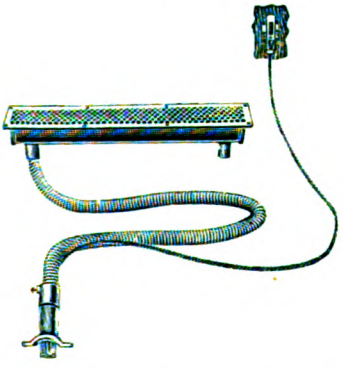
Fits every nut on every demountable rim. Absolutely automatic in action. All steel with indestructible handles and jaws even in the face of rough usage. Carries in any tool box. Finished in black enamel and nickel. Packed in fibre board cartons of 10. Price, $1.75.

And the Famous

UTILITY PROTECTED HEATERS

Two Styles

A Model for Every Car



Note that Utility Heaters are made both Foot-Rail and Register types.

The medium size fittings are practically universal, in that they fit exhaust pipes on about 98% of cars in use.

Foot-Rail Type Prices

Utility Protected Heater, 27" long.....$20.00
Utility Front Seat Heater, 17" long, for front seats, coupes and small cars.... 12.50
Utility Jr., for Fords..... 9.00
Utility De Luxe for 8-cylinder cars, 27" long 25.00

Register Type Prices

Utility Register Type Heater, 27" long.$30.00
Utility Jr., Register Type, 17" long, for coupes, Fords, tonneaus of other light cars and front seats of large cars 22.50
Utility Jr., Special for Buicks..... 25.00

Manufacturers

HILL PUMP VALVE CO. Belmont and Knox Aves., CHICAGO

Sales Department

THE ZINKE CO., 1323 Michigan Ave., Chicago

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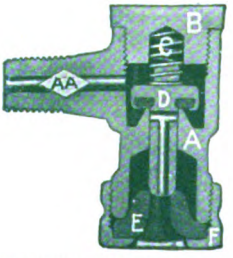
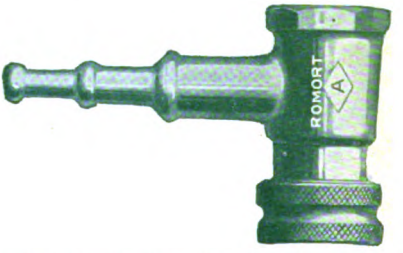
THE ZINKE COMPANY

ROMORT AIR APPLIANCES



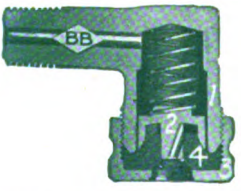
Automatic Air Valves



Style "AA." This is a heavy duty automatic air valve especially designed for use with the Romort Universal Hose Coupling shown on this page. It has ¼-inch I. P. threaded stem. Price, each.....$3.00

Style "A." For heavy duty the styles "A" and "AA" are recommended. Style "A" is furnished with step-up type stem which accommodates ¼-inch, ⅜-inch or ½-inch inside diameter hose. Special stems can be furnished to fit any style metallic hose.

Price, each $3.00



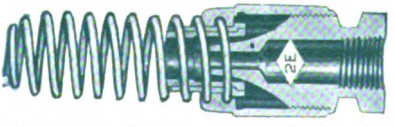
Automatic Air Valves

Style "BB." A light and inexpensive automatic air valve, equipped with ¼-inch I. P. thread. Particularly designed for use with Romort Universal Hose Coupling.

Price, each $1.25

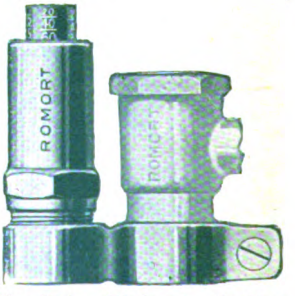
Style "B." Similar to the Style "BB" valve, excepting that it has the "step-up" type stem, accommodating ¼-inch, ⅜-inch or ½-inch inside diameter tubing.

Price, each $1.25



Universal Hose Coupling. For use with threaded stem automatic air valves, also for connecting air hose to tanks. Has ¼-inch I. P. thread. May be used with either rubber or metal covered hose, up to ¾-inch, inclusive.

Price, each.....$1.25



Tire Tester Attachment. Combines tire tester with Romort Automatic Air Valves. Simply slip gauge manufactured by A. Schrader's Son, Inc., into attachment.

Price, each.....$1.50

Complete Catalog of Romort Appliances, Sent on Request

Manufacturers

Romort Manufacturing Company **Oakfield and Chicago**

Exclusive Sales

The Zinke Company, 1323 Michigan Ave., Chicago

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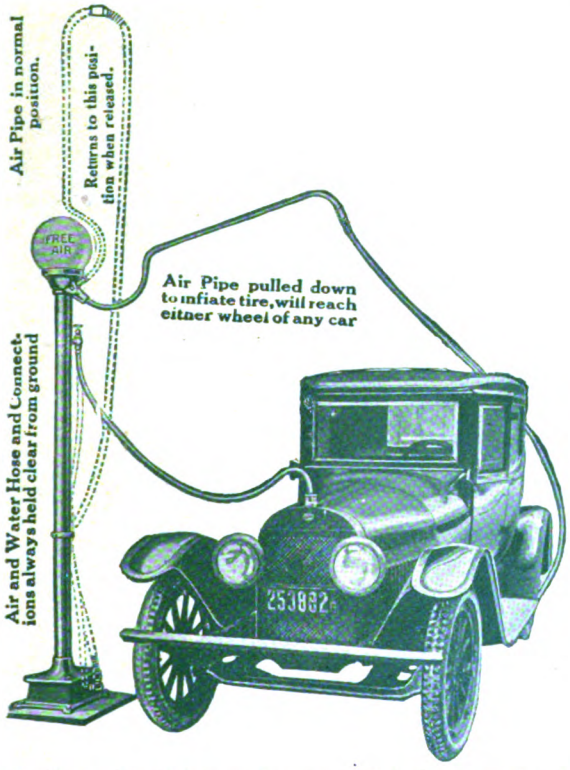
THE ZINKE COMPANY

ROMORT AIR & WATER STATION



Combines effective advertising and ornamental lamp post with air and water service.

Hinged air pipe always stands in vertical position when not in use, holding hose and valve connection clear of the ground. The reach of the hose is sufficient to supply air to either tire without moving the car. The return of the arm through which the air hose passes is gradual, being controlled by an oil piston, preventing damage caused by quick return. Flexible wire armor on hinged air pipe and automatic air valve prevents kinks, breaks or short bends in hose.

Made for use with the customary air compressor service.

No joints to leak as there is one continuous length of hose from valve to base of air station.

Electric light in globe at the top.

Price, Model 11 (air only) $75.00

" Model 12 (air and water) 80.00

Manufacturers

Romort Manufacturing Company **Oakfield and Chicago**

Exclusive Sales

The Zinke Company, 1323 Michigan Ave., Chicago

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THE ZINKE COMPANY

A distinctly individual type of radiator for the Ford car.

Spirex spirals are the principle of the patented construction, making for greater cooling capacity than can be obtained by the use of any other radiator. Forty-two per cent greater cooling capacity guaranteed.

The flexible metal used in its construction reduces the possibility of breakage as a result of freezing, to a minimum.

Manufactured by MODINE MFG. COMPANY, Racine, Wis.

THE ZINKE COMPANY, Sales Department

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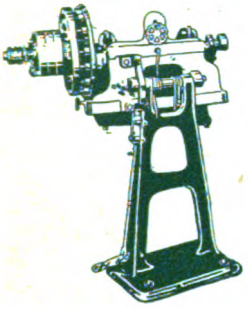
THE ZINKE COMPANY

Carswell-Hammond Motor Bench Stand

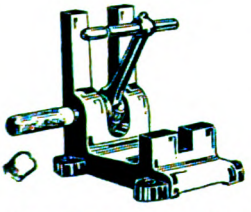


The motor bench stand shown above is built and designed especially for the Ford motor. When the motor is placed in the stand, it can be dissembled or assembled without removing. The stand has a foot lever to operate the swinging table. Shipping weight of the above, 170 pounds.

We also supply the above stand specially constructed to handle Fordson tractor motors as well as Dodge motors. Shipping weight of Fordson tractor stand, 325 pounds. Shipping weight of Dodge motor stand, 210 pounds.

Dealer's Price.....$42.50
With Portable Base... 62.00

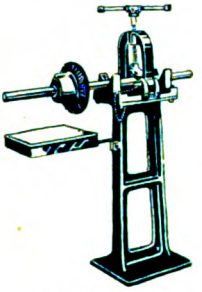
Carswell-Hammond Alignment Machine for Ford Connecting Rods



All connecting rods should be tested before replacing them in the motor. A bent connecting rod will cause a slap in same. This is the most efficient type of alignment machine built for straightening Ford connecting rods exclusively. Shipping weight, 40 pounds.

Dealer's Price.....$24.00

Carswell-Hammond Rear Axle Vise Stand



This stand is especially designed for Ford rear axle work, but can be used for other axles as well. The stand holds the axle housing firmly. Shipping weight of the above is 140 pounds.

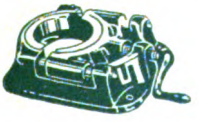
Dealer's Price.....$36.50
No Base with Axle Vise Stand

Carswell-Hammond Portable Base and Castors

This caster base makes any of our motor bench or axle vise stands portable. This base makes it possible to easily move your work as necessity demands. Shipping weight, 90 pounds.

Dealer's Price.....$19.50

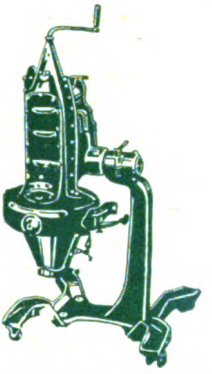
Carswell-Hammond Piston Vise



This piston vise will be found excellent for quickly and securely holding a piston without damaging same, enabling the workman to easily drive out bushings on pins and remove or replace piston rings. Ford and Fordson size jaws are furnished with each vise. Other sizes can be furnished at a small additional cost. Shipping weight, 25 pounds.

Dealer's Price.....$15.00

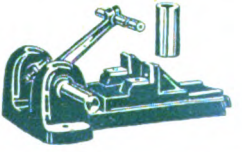
Carswell-Hammond Revolving Assembly and Dissembly Stand



As the above illustration shows, this stand will permit the turning of the entire Ford motor as a unit to any position about the revolving axis. The above stand is shown with the caster roller base attached, but is furnished without it if desired. This stand will be found valuable in performing work on several sides of the motor at once, enabling several workmen to operate without interference with each other and having the parts properly exposed to them and within easy reach.

Dealer's Price.....$42.50
With Portable Base.... 62.00

Carswell-Hammond Adjustable Connecting Rod Alignment Machine



Any connecting rod can be straightened or lined up with our adjustable machine. The arbor pins are for Ford connecting rods. Bushings are used for the different size crank shafts. Pins can be furnished for any type rod. Shipping weight, 60 pounds.

Dealer's Price.....$85.00

Manufacturers

CARSWELL-HAMMOND MFG. CO., Boone, Iowa, U. S. A.

Sales Department

THE ZINKE CO., 1323 Michigan Ave., Chicago, Ill.

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THE ZINKE COMPANY

ROBERTS

CUT-OUT and SAFETY VALVE

THE Roberts Cut-Out and Safety Valve combines the utility of an efficient cut-out with a safety valve of positive operation. It allows the burnt gases free and unobstructed passage from the cylinders and prevents them from mixing with the fresh charge.

When the cut-out is open, the exhaust or the dust it stirs up cannot get into the car because it is ejected straight out at the rear end of the muffler.

A GUARANTEE AGAINST BURSTED MUFFLERS

The spring-controlled safety valve opens instantaneously when there is abnormal back pressure or muffler explosions due to faulty ignition or carburetor troubles.

The Roberts Cut-Out and Safety Valve can be quickly installed and replaces the standard exhaust end of the Ford muffler. There is nothing to get out of order, loosen or rattle. Complete with hand control and cable, $4.00. Packed in attractive, two color cartons in standard packages of twenty each.

The Roberts Cut-Out and Safety Valve is a genuine sales opportunity for dealers and jobbers. Write for our proposition.

Manufactured by
G. E. ROBERTS
172 Fifth St.
Milwaukee, Wis.

Exclusive Sales
THE ZINKE COMPANY
1323 Michigan Ave.
Chicago, Ill.

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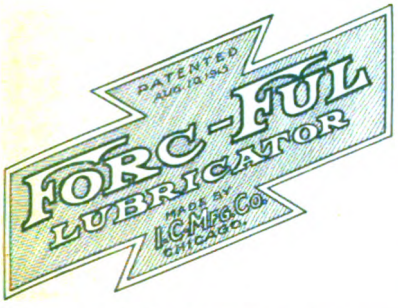
THE ZINKE COMPANY



TO PUT GREASE IN A

Ford Car

IN THE RIGHT QUANTITY AND AT THE RIGHT PLACE

To INSURE Perfect Lubrication Requires a

FORC-FUL LUBRICATOR

NOT MERELY A GREASE GUN, BUT A HIGH PRESSURE LUBRICATING SYSTEM

that enables you to force out the old accumulation of worn out grease, grit and dirt, and fill the bearings with clean fresh grease.

The FORC-FUL lubricating outfit includes the FORC-FUL Lubricator and **Special Connections for every place on a Ford Car, designed for hard grease lubrication, including:**

King Bolts—2, Tie Rod Bolts—2, Rear Wheel Bearings—2, Universal Joints, **Transmission Bearing, Differential Gears, Rear Drive Shaft Bearings, Steering Post, Fan Bearings, and THE FRONT WHEEL BEARINGS.**

The FORC-FUL Lubricator is the only lubricator ever designed for supplying **grease to the front wheel hubs, and it not only fills the entire hub with new clean grease, but first forces out the old grease and grit, thereby prolonging the life of the bearings and stops the stripping of hub cap threads.**

Grease Cup Lubrication is a tedious, messy job, that is invariably neglected, **if not entirely ignored.**

FORC-FUL Lubrication is easy, clean and 100% efficient, requiring but a **few moments to go over the entire car without soiling the clothes; the bearings are filled FULL of new clean grease and the old grease eliminated.**

Manufacturers

I. C. MANUFACTURING COMPANY — Chicago, Illinois

Exclusive Sales

THE ZINKE COMPANY — 1323 Michigan Ave. — Chicago, Illinois

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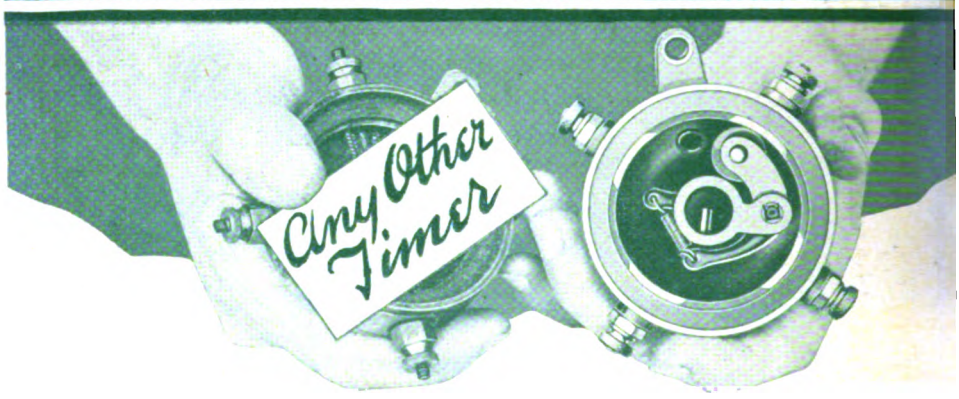

Let the Customer Choose

Next time a Ford driver asks you for a replacement timer, just let him see a **Milwaukee Timer** along side of any other make you have in stock.

Nine out of ten will choose the **Milwaukee.** They like its simple, rugged design (only two moving parts). They can see that it's built to last—of the best materials and without frills. In fact, it is guaranteed to outwear any other timer made. They know it is standard—over 3,000,000 Fords already use the same type. And its price is right—$2.25 retail.

More **Milwaukee Timers** are sold than all other makes combined. Hundreds of thousands sold in 1920. Capacity of great new plant, 5,000 every 24 hours.

If you're not handling the **Milwaukee Timer,** ask your jobber about it. It is one of the best selling Ford items you can handle. Nationally advertised in 14 publications, including The Saturday Evening Post.

MILWAUKEE AUTO ENGINE & SUPPLY CO.

Milwaukee, Wisconsin

MILWAUKEE TIMER *for* FORDS

There is only one genuine Milwaukee Timer—look for the name on the shell.

MILWAUKEE GUARDIAN BUMPERS

Guardian Bumpers
Another super-plus product made by the Milwaukee Auto Engine & Supply Co. —"the timer people."

Trufit Bumper
Fits Essex and 1919-20 Buick. Also many other cars. Strongest and best clamp ever designed.

Conqueror Bumper
Fits almost any car, front or rear. Long enclosed springs. Very popular with the trade.

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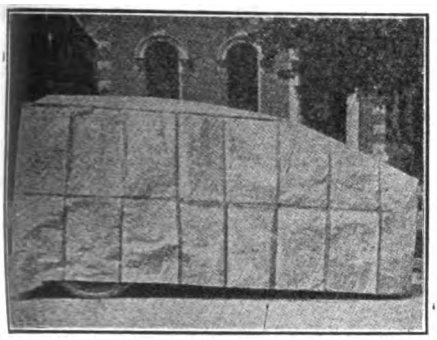

Kennedy Auto Storage Covers

To meet the need of an inexpensive and efficient cover for automobiles while in dead storage we are making a paper cover, which is proving the right thing for this purpose.

These covers are made of strong, heavy paper, properly reinforced to prevent tearing.

They protect the car against dirt, dust and moisture and will prevent the polished portions from tarnishing and the finish from checking in cold weather.

These covers are salable to individual car owners at a good profit as well as to furnish the dealer a protection for his stock of new cars.

We make them in four sizes: 7 Passenger, 5 Passenger, Ford Special, Electric

Winter will soon be here and dealers can handle these covers with satisfaction and profit. Further information on request.

The Kennedy Car Liner & Bag Co., Shelbyville, Ind.
Canadian Branch Factory: Woodstock, Ont.

Make Old Boreas Pay You Dividends

Old Boreas—King Winter—is the source of comfortable profit for the automobile accessory dealer who carries Campbell Radiator and Engine Covers.

Campbell Covers are favorites with the motorist because they fit with a snug trimness that preserves every fine line of the car. An overcoat—yet Campbell Covers give the car a dress-suit look.

Then there's the square flap in front—exclusive in these covers—that scientifically controls the air current and minimizes winter motor troubles.

These covers are diamond-stitched, fine pebble-grain material outside, and warm kersey blanket in between.

Write us today for price list.

The Perkins-Campbell Company
622-626 Broadway, Cincinnati, Ohio

BADGER

Seat Covers — Slip Roofs — Side Curtains—Back Curtains —With Plate Glass Windows

The very cream of the world's markets. Unexcelled quality. Astonishingly reasonable prices. Leaders in modernism. Latest improvements. Many exclusive advantages. Widest selection. Superiority firmly established by years of satisfactory service given to thousands of buyers.

Dealers everywhere find *every* Badger Product a

BIG BUSINESS GETTER

Heavy—steady and ever increasing demand.

Our proposition certain to show you a splendid sales increase.

Write for it to-day.

Wisconsin Auto Top Co.
Racine, Wis.

TIRE
RADIATOR
HOOD
SPRING

COVERS

TIRE COVERS IN ALL STYLES AND COLORS
RADIATOR COVERS FOR ALL CARS
HOOD COVERS IN PATENT LEATHER FINISH
SPRING LUBRICATING COVERS FOR ALL CARS

Write for Prices and Discounts

WRIGHT COVER MANUFACTURING CO. (Not Inc.)
CHICAGO 1413 So. Michigan Ave. ILLINOIS

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COVERS, Radiator and Hood (Continued)

Simon & Co., S. C., 825 N. Second St., Philadelphia, Pa.
Standard Top Co., 596-98 Market St., Wilkes-Barre, Pa.
Sure-Fit—See Hodes-Zink Mfg. Co.
Sutter-Mayhew Co., 684 Canfield Ave., Detroit, Mich. "Mayhew."
Tatco—See Thomas Auto Top Co.
Thomas Auto Top Co., 417 E. Jackson St., Muncie, Ind. "Tatco."
Tyler Mfg. Co., 755 Boylston St., Boston, Mass. "Tymco."
Tymco—See Tyler Mfg. Co.
Universal Trimming Co., 2425 Michigan Ave., Chicago, Ill.
Ustus—See Dafoe-Eustice Co.
Wilcox Co., M. I., Water St., Toledo, O.
Wisconsin Auto Top Co., Racine, Wis. "Badger." (See page 317.)
Wright Cover Mfg. Co., 1413 S. Michigan Ave., Chicago, Ill. (See page 317.)
Zero King —See Holden Mfg. Co.

COVERS, Radiator and Hood, for Fords

(To prevent the water freezing in cold weather)

Accurate Cover Co., 373 Canal St., New York, N. Y.
Anton & Ackermann Co., 132-34 Kansas Ave., Topeka, Kans.
Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 321.)
Ayers & Sons, Wm., Cumberland & Fourth Sts., Philadelphia, Pa.
B. E. Mfg. Co., 18 W. 18th St., New York, N. Y. "Bemco." (See page 321.)
Bemco—See B. E. Mfg. Co.
Buob & Scheu, 500-10 Webster Ave., Cincinnati, O. (See page 325.)
Campbell—See Perkins-Campbell Co.
Century Auto Top & Supply Co., 50 E. 26th St., Chicago, Ill.
Champion Chemical Co., Linden Ave. & Monroe St., Springfield, O.
Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.
Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Frost King."
Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.
Copp Co., George W., 518 W. 58th St., New York, N. Y. (See page 323.)
Co-Zee—See Omaha Auto Top Co.
Crawford Mfg. Co., 211 N. Foushee St., Richmond, Va.
Doerner & Co., 4127 32d St., Cincinnati, O. "Paragon."
Frost King—See Cincinnati Auto Specialty Co.
Gasco—See General Auto Specialty Co.
Gates Mfg. Co., 835 N. Meridian St., Indianapolis, Ind.
General Auto Specialty Co., 151 Berkeley St., Boston, Mass. "Gasco."
Gilbert Mfg. Co., 353 York St., New Haven, Conn.
Gordon Co., J. P., 555 N. Fourth St., Columbus, O. "Jack Frost." (See page 319.)
Goss Co., J. C., 20 E. Woodbridge St., Detroit, Mich.
Harac Sales Co., Drexel Bldg., Philadelphia, Pa.
Holden Mfg. Co., 409 N. Franklin Ave., St. Paul, Minn. "Zero King."
Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributor for Frost King Covers.) (See page 1187.)
Hopewell Bros., Watertown, Mass. (See page 629.)
Jack Frost—See Gordon Co.
Liberty Top & Tire Co., 123 E. Eighth St., Cincinnati, O.
Lockwood Mfg. Co., Kansas City, Mo. (See page 323.)
Myar Mfg. Co., 134 E. Fourth St., Little Rock, Ark.
Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 321.)
Omaha Auto Top Co., 709-11 S. 15th St., Omaha, Neb. "Co-Zee."
Paragon—See Doerner & Co.
Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. "Campbell." (See page 317.)
Phoenix Tent & Awning Co., First & Monroe Sts., Phoenix, Ariz.
Powers Mfg. Co., Waterloo, Ia. (See page 593.)
Premier Auto Novelty Mfg. Co., 875 W. Broadway, New York, N. Y.
Prince Auto Fabric Mfg. Co., 4101 Fort Hamilton Ave., Brooklyn, N. Y.
R. C. Fabric Co., 1383 Bedford Ave., Brooklyn, N. Y.
R-E—See Roose Mfg. Co.
Roose Mfg. Co., 327-33 W. Main St., Louisville, Ky. "R-E." (See pages 129, 151, 325 and 327.)
Simon & Co., S. C., 825 N. Second St., Philadelphia, Pa.
Standard Top Co., 596-98 Market St., Wilkes-Barre, Pa.
Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo.
Tatco—See Thomas Auto Top Co.
Thomas Auto Top Co., 417 E. Jackson St., Muncie, Ind. "Tatco."
Wilcox Co., M. I., Water St., Toledo, O.
Zero King—See Holden Mfg. Co.

COVERS, RIM—See Covers, Spare Tire

COVERS, SEAT—See Covers, Slip

COVERS, SHIPPING—See Covers, Paper and Canvas Shipping

COVERS, Slip

(See also Tops, Automobile)

A & E Auto Top Co., 33-35 E. Cross St., Ypsilanti, Mich. (See page 325.)
Accurate Cover Co., 373 Canal St., New York, N. Y.
Alper Auto Top Co., 31 Willow St., Waterbury, Conn.
Anton & Ackerman Co., 132-34 Kansas Ave., Topeka, Kans.
Arizona Auto Top Co., 451 N. Central Ave., Phoenix, Ariz.
Atlanta Auto Top & Trimming Co., 155-51 Edgewood Ave., Atlanta, Ga.
Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 321.)
Auto Cape Top Co., 2324-28 S. Michigan Ave., Chicago, Ill.
B. E. Mfg. Co., 18 W. 18th St., New York, N. Y. "Bemco." (See page 321.)

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READY TO "BUTTON-HOLE" ON

AND BOXED, READY FOR QUICK, EASY SELLING

Gordon Jiffy Cushion Slips are an excellent merchandising proposition. They offer every motorist a simple attractive seat covering that is easy to attach or detach.

Removable—Washable—Low Priced

These new Cushion Slips button on like a garment and they can be instantly attached or taken off. They are made of heavy, cold-water-shrunk materials that launder perfectly without fading. The price is within reach of every motorist. $2.00 to $5.50 per seat.

Gordon Jiffy Cushion Slips are made in only twelve standard sizes, each size fitting a number of cars. They come packed one to a neatly labeled box which contains a list of the sizes needed for any car and photographic instructions for putting them on.

They are easy to handle and easy to sell. Write us for catalogue, price list and samples.

The J. P. Gordon Company

555 North Fourth Street Columbus, Ohio

Manufacturers of Seat Covers, Tire Covers, Top Recoverings, Radiator and Engine Robes and other fabric equipment for automobiles.

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COVERS, Slip (Continued)

Badger—See Wisconsin Auto Top Co.

Bemco—See B. E. Mfg. Co.

Bliss Auto Top Co., C. P., 1351 Court Pl., Denver, Colo.

Buob & Scheu, 500-10 Webster Ave., Cincinnati, O. (See page 325.)

Campbell—See Perkins-Campbell Co.

Casco—See Cincinnati Auto Specialty Co.

Central Auto Top & Leather Co., 419½ N. Capitol Ave., Indianapolis, Ind.

Century Auto Top & Supply Co., 50 E. 26th St., Chicago, Ill.

Chanslor & Lyon Top Co., 1208 S. Grand Ave., Los Angeles, Cal.

Chicago Auto Equipment Co., 808-10 W. Jackson Blvd., Chicago, Ill.

Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Casco."

Clifton Mfg. Co., 324-27 Pleasant St., Waco, Tex.

Co-Zee—See Omaha Auto Top Co.

Columbia Tire & Top Co., 922 Commonwealth Ave., Boston, Mass.

Consolidated Auto Top Co., 4049-59 St. Clair Ave., Cleveland, O.

Continental Auto Top Mfg. Co., 3900 Washington Ave., St. Louis, Mo.

Cooling Carriage Co., 406 French St., Wilmington, Del.

Copp Co., George W., 518 W. 57th St., New York, N. Y. (See page 323.)

Cov-O-Alls—See Gordon Co.

Crawford Mfg. Co., 211 N. Foushee St., Richmond, Va.

Easy-On—See Gordon Co.

Englander Co., 5940 Second St., W., Detroit, Mich.

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 545.)

Fitzwell—See Niagara Fabric Mfg. Co.

Frankel Specialties Corp., 356 W. 50th St., New York, N. Y.

Gates Mfg. Co., 835 N. Meridian St., Indianapolis, Ind.

Geco—See Glover Equipment Co.

General Top Co., 4310 St. Clair Ave., Cleveland, O.

Genesee Mfg. Co., 516-18 Harrison St., Flint, Mich.

Glover Equipment Co., 412 N. Capitol Ave., Indianapolis, Ind. "Geco."

Goldin Mfg. Co., 130-32 Marietta St., Atlanta, Ga.

Gordon Co., J. P., 555 N. Fourth St., Columbus, O. "Easy-On." "Jiffy." "Cov-O-Alls." (See page 319.)

Graesam Auto Co., 258 W. 69th St., New York, N. Y.

Hayes & Miller Co., 518-22 E. 57th St., New York, N. Y.

Herrity Co., E. A., 60 Summer St., Stamford, Conn.

Holden Mfg. Co., 409 N. Franklin Ave., St. Paul, Minn.

Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributors for Casco Covers.) (See page 1187.)

Hyatt Auto Top Co., 310-20 Wood St., Trenton, N. J.

Jiffy—See Gordon Co.

Johnston Commercial Body Co., Fort Smith, Ark.

Jones & Pimm Co., 422 W. Onondaga St., Syracuse, N. Y.

Lamco—See Lehman Mfg. Co.

Lancaster Body Co., Fountain & New Holland Aves., Lancaster, Pa.

Lehman Mfg. Co., 310 Fourth St., Connelton, Ind. "Lamco." (See page 151

Liberty Top & Tire Co., 123 E. Eighth St., Cincinnati, O.

Lockwood Mfg. Co., Kansas City, Mo. (See page 323.)

McDonald Bros., 1005-07 E. Pike St., Seattle, Wash.

Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.

Mobile Top Co., 26 Selden Ave., Detroit, Mich.

Moore & Co., 647 W. 50th St., New York, N. Y. "Right Fit."

Myar Mfg. Co., 124 E. Fourth St., Little Rock, Ark.

Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. "Presto." (See page 321.)

National Auto Top Co., 510 W. Broad St., Richmond, Va.

Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."

Omaha Auto Top Co., 709-11 S. 15th St., Omaha, Neb. "Co-Zee."

Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. "Campbell." (See page 317.)

Premier Auto Novelty Mfg. Co., 375 W. Broadway, New York, N. Y.

Presto—See Nathan Novelty Mfg. Co.

Prince Auto Fabric Mfg. Co., 4101 Fort Hamilton Ave., Brooklyn, N. Y.

Production Auto Top Co., 372 Fourth Ave., Long Island City, N. Y.

R. C. Fabric Co., 1383 Bedford Ave., Brooklyn, N. Y.

Right Fit—See Moore & Co.

Ramson Auto Top & Equipment Co., 103-[illegible] Fountain St., Providence, R. I.

Springfield Harness Co., 55-59 Dwight St., Springfield, Mass.

Standard Top Co., 596-98 Market St., Wilkes-Barre, Pa.

Steiner, Jas., 409 N. Seventh St., Manitowoc, Wis.

Sterling Top & Equipment Co., 518-22 W. 57th St., New York, N. Y. "Wear-Well."

Tatco—See Thomas Auto Top Co.

Thomas Auto Top Co., 417 E. Jackson St., Muncie, Ind. "Tatco."

Universal Trimming Co., 2425 Michigan Ave., Chicago, Ill.

Wear-Well—See Sterling Top & Equipment Co.

Wilcox Co., M. I., Water St., Toledo, O.

Williams Auto Top Works, C. T., 1107 Seventh St., Wichita Falls, Tex.

Wisconsin Auto Top Co., Racine, Wis. "Badger." (See page 317.)

COVERS, Slip, for Fords

(See also Tops)

Accurate Cover Co., 373 Canal St., New York, N. Y.

Anton & Ackermann Co., 132-34 Kansas Ave., Topeka, Kans.

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 321.)

B. E. Mfg. Co., 18 W. 18th St., New York, N. Y. "Bemco." (See page 321.)

Badger—See Wisconsin Auto Top Co.

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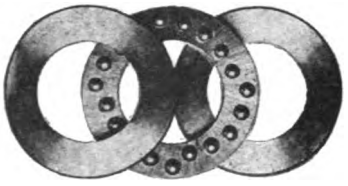
ACORN BALL BEARINGS



We manufacture all Standard sizes of Flat and Grooved Type Thrust Ball Bearings and carry same in stock. Price List sent on request.

We also replace Flat or Grooved Type Thrust Bearings for all make of cars or trucks in any quantity to order on short notice.

Workmanship the best only and fully guaranteed.

THE ACORN BEARING CO.
New Britain, Conn.

BEMCO BRAND

SEAT COVERS

None Better

TIRE COVERS

For Every Make of Tire

TOP HOOD COVERS **FORD SPECIALTIES**
TOOL ROLLS **RADIATOR COVERS**
HOOD COVERS **Etc., Etc.**

Send for Descriptive Matter

B. E. MANUFACTURING CO.
18 West 18th Street New York

NATHAN

This TRADE-MARK will protect you in Purchasing

Automobile and Motorcycle Fabric and Leather Accessories

NATHAN

Offers Guaranteed Satisfaction

Standard for Over Sixteen Years

Tire Covers, Seat Covers, Radiator Covers, Recovering outfits for Ford Tops, innertube bag, Wedge Shape Back Cushion, Comfy Cushion, Leggins, Tool Rolls, Steering Wheel Covers, Floor Mats, Running Boards, etc.

A Special Line for

NATHAN

FORD CARS

offering every requirement as to style, quality and price. Send for free Illustrated Catalog.

NATHAN NOVELTY MFG. CO.
55 Fifth Ave., cor. Twelfth St.
New York City
World's largest variety Auto and Motorcycle Fabric Supplies.

ATLAS

Fabric Accessories

Tire Covers for tires attached to any car. Seat covers for Ford, Overland, Dodge & Maxwell exclusively. Complete line of fabric specialties for all cars. Curtain Light Replacements, Pillows, Etc.

Write today for

CATALOG

"Atlas" Specialties sell because they are "The Right Goods at the Right Price." Electros free to jobbers.

ATLAS SPECIALTY MFG. CO.
16 to 22 East 24th St.,
Chicago, Ill.

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COVERS, Slip, for Fords (Continued)

Bemco—See B. E. Mfg. Co.

Casco—See Cincinnati Auto Specialty Co.

Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Casco."

Co-Zee—See Omaha Auto Top Co.

Cov-O-Alls—See Gordon Co.

Crawford Mfg. Co., 211 N. Foushee St., Richmond, Va.

Easy-On—See Gordon Co.

Fitzwell—See Niagara Fabric Mfg. Co.

Gates Mfg. Co., 835 N. Meridian St., Indianapolis, Ind.

Goldin Mfg. Co., 130-32 Marietta St., Atlanta, Ga.

Gordon Co., J. P., 555 N. Fourth St. Columbus, O.. "Easy-On." "Jiffy." "Cov-O-Alls." (See page 319.)

Holden Mfg. Co., 409 N. Franklin Ave., St. Paul, Minn.

Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributor for Casco Covers.) (See page 1187.)

Jiffy—See Gordon Co.

Liberty Top & Tire Co., 123 E. Eighth St., Cincinnati, O.

Lockwood Mfg. Co., Kansas City, Mo. "O-So-Klene." (See page 323.)

Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.

Myar Mfg. Co., 124 E. Fourth St., Little Rock, Ark.

Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. "Presto." (See page 321.)

Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."

O-SO-Klene—See Lockwood Mfg. Co.

Omaha Auto Top Co., 709-11 S. 15th St., Omaha, Neb. "Co-Zee."

Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. (See page 317.)

Premier Auto Novelty Mfg. Co., 375 W. Broadway, New York, N. Y.

Presto—See Nathan Novelty Mfg. Co.

Prince Auto Fabric Mfg. Co., 4101 Fort Hamilton Ave., Brooklyn, N. Y.

R. C. Fabric Co., 1383 Bedford Ave., Brooklyn, N. Y.

R-E—See Roose Mfg. Co.

Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E." (See pages 129, 151, 325 and 327.)

Western Auto Top Co., 1208-10 Jackson St., Omaha, Neb.

Whitehall Auto Top Co., 539 Whitehall St., Atlanta, Ga.

Wilcox Co., M. I., Water St., Toledo, O.

Wisconsin Auto Top Co., Racine, Wis. "Badger." (See page 317.)

COVERS, Spare Tire

(For covering spare tires and tubes; also for demountable rims or wheels)

Accurate Cover Co., 373 Canal St., New York, N. Y.

Allen Auto Specialty Co., 16 W. 61st St., New York, N. Y. (See page 323.)

Anton-Ackerman Co., 132-34 Kansas Ave., Topeka, Kans.

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. "Howard," "Chicago." (See page 321.)

B. E. Mfg. Co., 18 W. 18th St., New Yor N. Y. "Bemco." (See page 321.)

Badger—See Wisconsin Auto Top Co.

Bailey-Fitwell Co., 1318 S. Grand Ave., L Angeles, Cal. "Fitwell."

Bemco—See B. E. Mfg. Co.

Betterall—See Prince Auto Fabric Mfg. Co.

Burlock & Co., Chas., Wausau, Wis.

Campbell—See Perkins-Campbell Co.

Casco—See Cincinnati Auto Specialty Co.

Central Auto Top & Leather Co., 419½ Capitol Ave., Indianapolis, Ind.

Chicago—See Atlas Specialty Mfg. Co.

Chicago Wholesale Saddlery & Mfg. Co., 73 41 W. Randolph St., Chicago, Ill.

Cincinnati Auto Specialty Co., 312-14 Main S Cincinnati, O. "Casco."

Cleveland-Akron Bag Co., Cleveland, (See page 101.)

Clifton Mfg. Co., 323-27 Pleasant St., Wac Tex.

Co-Zee—See Omaha Auto Top Co.

Crawford Mfg. Co., 211 N. Foushee St., Rich mond, Va.

Dafoe-Eustice Co., 4042 W. Jefferson Av Detroit, Mich. "Duk-Bak," "Deco," "Ustus

Deco—See Dafoe-Eustice Co.

Detroit Slip Cover Co., 449 E. Canfield Av Detroit, Mich.

Doerner & Co., 4127 32nd St., Cincinnati, "Paragon."

Duk-Bak—See Dafoe-Eustice Co.

Easy-On—See Gordon Co.

Economy Seat Co., 3132-36 S. Canal St., Ch cago, Ill. "Esco."

Edelstone Fabric Co., Wm. W., 25 Thor dike St., Cambridge, Mass. "Wedco." (See page 563.)

Ero Mfg. Co., 753-55 W. Jackson Blvd Chicago, Ill. (See page 545.)

Esco—See Economy Seat Co.

Fitwell—See Bailey & Fitwell Co.

Fitzwell—See Niagara Fabric Mfg. Co.

Frankel Specialties Corp., 356 W. 50th S New York, N. Y.

Gilbert Mfg. Co., 353 York St., New Have Conn.

Gordon Co., J. P., 555 N. Fourth St., C lumbus, O. "Easy-On." (See page 319

Goss Co., J. C., 20 E. Woodbridge St., Detroi Mich.

H. B.—See Hopewell Bros.

Holmes, George L., 1776 Broadway, Ne York, N. Y. (Eastern Distributor f Casco Covers.) (See page 1187.)

Hopewell Bros., Watertown, Mass. "H B." "Tirex." "Security." (See page 629.)

Howard—See Atlas Specialty Mfg. Co.

Keystone—See Nathan Novelty Mfg. Co.

Landers Bros. Co., Dept A2, Toledo, O. (See page 605.)

Lockwood Mfg. Co., Kansas City, Mo. (See page 323.)

Martin Auto Specialty Co., 317 Forest Ro Ave., Lancaster, O.

Nathan Novelty Mfg. Co., 55 Fifth Av New York, N. Y. "Keystone," "Presto (See page 321.)

Niagara Fabric Mfg. Co., 47 Greene St., Ne York, N. Y. "Fitzwell."

Omaha Auto Top Co., 709-11 S. 15th S Omaha, Neb. "Co-Zee."

Paragon—See Doerner & Co.

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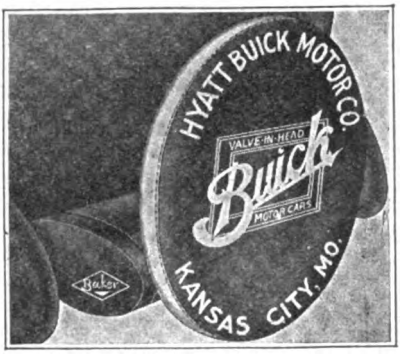

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COVERS, Spare Tire (Continued)

Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. "Campbell." (See page 317.)

Powers Mfg. Co., Waterloo, Ia. (See page 593.)

Premier Auto Novelty Mfg. Co., 375 W. Broadway, New York, N. Y.

Presto—See Nathan Novelty Mfg. Co.

Prince Auto Fabric Mfg. Co., 4101 Fort Hamilton Ave., Brooklyn, N. Y. "Betterall."

Protex-a-Tire—See Stephens Rubber Co.

R. C. Fabric Co., 1383 Bedford Ave., Brooklyn, N. Y.

Security—See Hopewell Bros.

Springfield Harness Co., 55-59 Dwight St., Springfield, Mass.

Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo. "Protex-a-Tire."

Tatco—See Thomas Auto Top Co.

Thomas Auto Top Co., 417 E. Jackson St., Muncie, Ind. "Tatco."

Tirex—See Hopewell Bros.

Troy Carriage Sun Shade Co., 710 Lincoln Ave., Troy, O.

Wedco—See Edelstone Fabric Co.

Wisconsin Auto Top Co., Racine, Wis. (See page 317.)

Wright Cover Mfg. Co., 1413 S. Michigan Ave., Chicago, Ill. (See page 317.)

COVERS, Spare Tire, for Fords

(For covering spare tires and tubes; also for demountable rims or wheels)

Accurate Cover Co., 373 Canal St., New York, N. Y.

Allen Auto Specialty Co., 10 W. 61st St., New York, N. Y. (See page 323.)

Anton & Ackermann Co., 132-34 Kansas Ave., Topeka, Kans.

Atlas Specialty Mfg. Co., 16-20 E. 24th St., Chicago, Ill. "Ezy," "Howard." (See page 321.)

B. E. Mfg. Co., 18 W. 18th St., New York, N. Y. "Bemco." (See page 321.)

Bemco—See B. E. Mfg. Co.

Casco—See Cincinnati Auto Specialty Co.

Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Casco."

Copp Co., George W., 518 W. 58th St., New York, N. Y. (See page 323.)

Crawford Mfg. Co., 211 N. Foushee St., Richmond, Va.

Doerner & Co., 4127 32d St., Cincinnati, O. "Paragon."

Easy-On—See Gordon Co.

Ezy—See Atlas Specialty Mfg. Co.

Gordon Co., J. P., 555 N. Fourth St., Columbus, O. "Easy-On." (See page 319.)

Holden Mfg. Co., 409 N. Franklin Ave., St. Paul, Minn.

Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributor for Casco Covers.) (See page 1187.)

Howard—See Atlas Specialty Mfg. Co.

Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.

Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 321.)

Paragon—See Doerner & Co.

R-E—See Roose Mfg. Co.

Roose Mfg. Co., 327-33 W. Main St., Louisville, Ky. "R-E." (See pages 129, 151, 325 and 327.)

COVERS, SPARE WHEEL—See Covers, Spare Tire

COVERS, SPRING—See Cups, Spring Leaf Lubricating

COVERS, STARTING CRANK—See Holders, Starting Crank

COVERS, STEERING KNUCKLE—See Boots, Steering Knuckle

COVERS, Steering Wheel Rim

(Leather, Rubber or Fabric Covers to lace or button on steering wheel rim to improve the grip)

Alpha—See Parker, Stearns & Co.

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 321.)

B. E. Mfg. Co., 18 W. 18th St., New York, N. Y. "Bemco." (See page 321.)

Bemco—See B. E. Mfg. Co.

Empire Rubber & Tire Co., Mulberry St. & Clinton Ave., Trenton, N. J.

Fitzwell—See Niagara Fabric Mfg. Co.

Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 321.)

Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."

Parker, Stearns & Co., 286 Sheffield Ave., Brooklyn, N. Y. "Alpha."

Wright Cover Mfg. Co., 1413 S. Michigan Ave., Chicago, Ill. (See page 317.)

COVERS, TIRE—See Covers, Spare Tire

COVERS, Top

(See also Tops, Automobile)

A & E Auto Top Co., 33-35 E. Cross St., Ypsilanti, Mich. (See page 325.)

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 321.)

B. E. Mfg. Co., 18 W. 18th St., New York, N. Y. "Bemco." (See page 321.)

Bemco—See B. E. Mfg. Co.

Bush & Scheu, 500-10 Webster Ave., Cincinnati, O. (See page 325.)

Burlock & Co., Chas., Wausau, Wis.

Central Auto Top & Leather Co., 419½ N. Capitol Ave., Indianapolis, Ind.

Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.

Cleveland-Akron Bag Co., Cleveland, O. (See page 101.)

Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.

Co-Zee—See Omaha Auto Top Co.

Detroit Slip Cover Co., 449 E. Canfield Ave., Detroit, Mich. "Pro-Tec-Shun."

Doerner & Co., 4127 32d St., Cincinnati, O. "Paragon."

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 545.)

Fitzwell—See Niagara Fabric Mfg. Co.

Geco—See Glover Equipment Co.

Glover Equipment Co., 412 N. Capitol Ave., Indianapolis, Ind. "Geco."

Lockwood Mfg. Co., Kansas City, Mo. (See page 323.)

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Ford Roadster Tops.....$22.10 and up
Ford Touring Car Tops.....$27.60 and up
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Save one-half the cost of a new top by using our New Auto Top Coverings, made to fit any make or model of Roadster or Touring Car. We make it complete, ready to apply. Anyone can put it on old frame. Prices $7.45 to $32.00.

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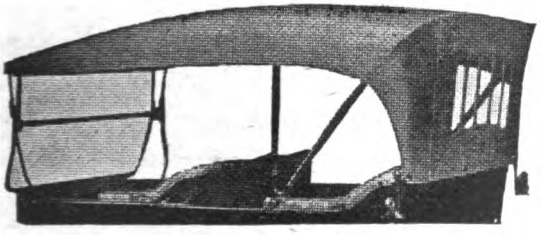

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COVERS, Top (Continued)

Myar Mfg. Co., 124 E. Fourth St., Little Rock, Ark.

Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 321.)

Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitswell."

Omaha Auto Top Co., 709-11 S. 15th St., Omaha, Neb. "Co-Zee."

Paragon—See Doerner & Co.

Prince Auto Fabric Mfg. Co., 4101 Fort Hamilton Ave., Brooklyn, N. Y.

Pro-Tec-Shun—See Detroit Slip Cover Co.

Standard Auto Top & Body Co., 1338 Race St., Philadelphia, Pa.

Universal Trimming Co., 2435 Michigan Ave., Chicago, Ill.

COVERS, Top, for Fords

(See also Tops, Automobile)

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 321.)

Buob & Scheu, 500-10 Webster Ave., Cincinnati, O. (See page 325.)

Donlin Auto Co., C. A., Hopkins, Mo.

Easy-On—See Gordon Co.

Economy Seat Co., 3132-36 S. Canal St., Chicago, Ill.

Fitswell—See Niagara Fabric Mfg. Co.

Gates Mfg. Co., 835 N. Meridian St., Indianapolis, Ind.

Gordon Co., J. P., 555 N. Fourth St., Columbus, O. "Easy-On." (See page 319.)

Hodes-Zink Mfg. Co., 312 W. State St., Fremont, O. "Sure-Fit."

Lockwood Mfg. Co., Kansas City, Mo. (See page 325.)

Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 321.)

Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitswell."

Premier Auto Novelty Mfg. Co., 375 W. Broadway, New York, N. Y.

R-E—See Roose Mfg. Co.

Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E." (See pages 129, 151, 325 and 327.)

Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo.

Sure-Fit—See Hodes-Zink Mfg. Co.

COVERS, UNIVERSAL JOINT—See Boots, Steering Knuckle

COVERS, UPHOLSTERY—See Covers, Slip

COVERS, WHEEL—See Covers, Steering Wheel Rim; also Covers, Spare Tire

COWL BOARDS FOR FORDS—See Cowls, Dash

COWL LIGHT REFLECTING MIRRORS—See Mirrors, Cowl Light Reflecting

COWLS, Dash and Cowl Boards, for Fords

Aske Moore Corp., 19 Lake Ave. N., Duluth, Minn.

Builders Mfg. Co., 828-30 N. Wells St., Chicago, Ill.

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 545.)

Johns-Manville Co., H. W., Madison Ave. & 41st St., New York, N. Y.

Louisville Veneer Mills, 1100-40 Fulton St., Louisville, Ky.

Motor Products Corporation, 11803 Mack Ave., Detroit, Mich. (See page 857.)

Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 177.)

Van Sicklen Co., Elgin, Ill. (See page 1105.)

W-A—See Whetstone & Co.

Warnerlite Products Corp., Davenport, Iowa. (See page 325.)

Whetstone & Co., John H., Court St., Lapeer, Mich. "W-A."

CRADLES, Portable Steel

(Steel Cradle or Holder upon which car is fastened and so constructed that car can be turned over to facilitate making repairs.)

Morrison Corp., Apollo Bldg., Pittsburgh, Pa.

Turn-Auto Corp., 149 Broadway, New York, N. Y. (See page 774.)

CRADLES, Radiator, for Fords

(Stamped steel plate or support to carry weight of radiator and prevent side lugs from being damaged)

Brocksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.

Dependable—See Gahm-McCormick Co.

Gahm-McCormick Co., 906 E. Main St., Streator, Ill. "Dependable." (See page 1139.)

Kees Mfg. Co., F. D., 24 High St., Beatrice, Neb.

CRANES, DRAGS AND JACKS, Truck Wheel Removing

Frayer-Miller Co., Bank of Commerce Bldg., Columbus, O.

Thomson Auto Specialties Co., 36-38 E. Chestnut St., Columbus, O.

CRANES, Portable

(For Chain Blocks or Hoists; See Blocks or Chains, Hoist)

Acme—See Moore Co.

Alben Co., 27th Ave. & Wahl St., Milwaukee, Wis. "Giant."

Boston & Lockport Block Co., 134 Condor St. (E. Boston), Boston, Mass.

Bradney Machine Co., Middletown, N. Y. (See page 1205.)

Brown Hoisting Machinery Co., 4403 St. Clair Ave., Cleveland, O. "Brownhoist."

Brownhoist—See Brown Hoisting Machinery Co.

Browning & Co., Victor R., 17701 Lake Shore Blvd., Cleveland, O.

Cameron Engineering Co., Washington, N. J.

Canedy-Otto Mfg. Co., Chicago Heights, Ill.

Canton Foundry & Machine Co., Third St. & Savannah Ave., S. E., Canton, O.

Channon Mfg. Co., James H., 223-33 W. Erie St., Chicago, Ill. (See page 127.)

Cleveland Chain & Mfg. Co., Cleveland, O.

Champion—See Milton & Son.

Giant—See Alben Co.

Hercules—See Soper, Geo. E.

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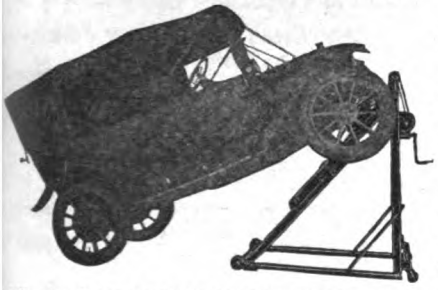
KLEMME ONE-MAN AUTO HOIST AND CRANE



The most practical time and labor saving device manufactured for the garage man.

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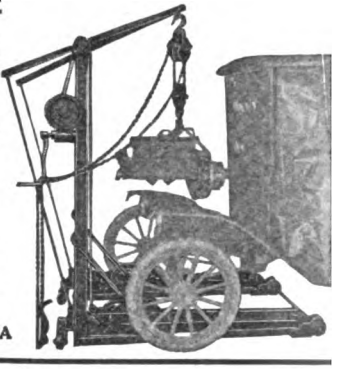
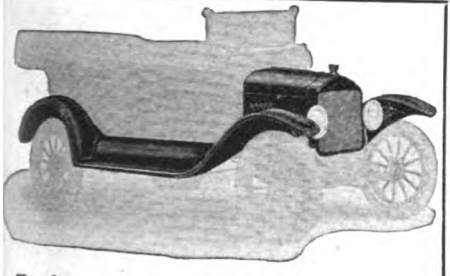


Mfg. by A. C. KLEMME MFG. COMPANY, DAVENPORT, IOWA
Sales Dept.—Bailey-Drake Co., Chicago, Ill.



Fenders,
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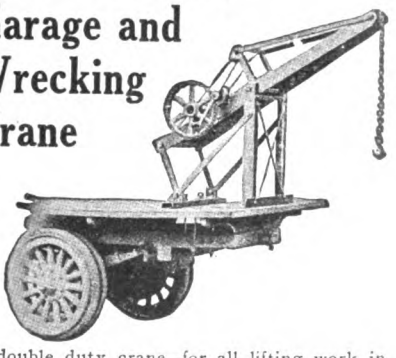

A double duty crane—for all lifting work in the garage as a Portable Floor Crane—for all outside Wrecking, Towing and Lifting.

Capacity as Floor Crane—1½ Tons
Capacity as Wrecking Crane—2 Tons

Can be taken down and put together again by two men in five minutes. Easily installed on any service car. The most wonderful garage tool ever developed. Write us today for full information and prices.

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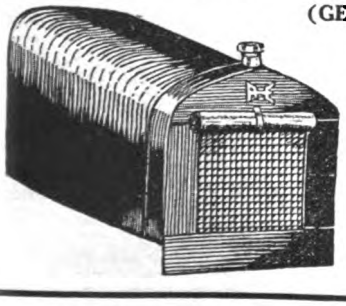
R-E RADIATOR AND HOOD COVERS

(GENUINE ASBESTOS LINED)



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Also made in all sizes to fit all cars.

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CRANES, Portable (Continued)

Hillite—See Manley Mfg. Co.

Imperial—See Ingersoll-Rand Co.

Imperial—See Moore Co.

Ingersoll-Rand Co., 11 Broadway, New York, N. Y. "Imperial."

Keystone Garage Equipment Co., 201 Devonshire St., Boston, Mass.

Klemme Mfg. Co., A. C., Davenport, Iowa. (See page 327.)

Lafayette Engineering Co., 208 S. Fourth St., Lafayette, Ind.

Lane Bros. Co., 48 Prospect St., Poughkeepsie, N. Y.

Manley Mfg. Co., York Pa. "Hillite." (See page 327.)

Miller—See Portable Tool Supply Co.

Milton & Son, S. G., 1104 Elk St., Franklin, Pa. "Champion."

Moore Co., Franklin, Winsted, Conn. "Acme," "Imperial."

New Jersey Foundry & Machine Co., 90 West St., New York, N. Y.

Niles-Bement-Pond Co., 111 Broadway, New York, N. Y.

Portable Tool Supply Co., 256 Main St., Buffalo, N. Y. "Miller."

Pull-U-Out Products Co., 727 Clark Ave., St. Louis, Mo.

Richards-Wilcox Mfg. Co., Third St. & C., B. & Q. R. R. tracks, Aurora, Ill.

Soper, Geo. E., 154 E. Water St., Kankakee, Ill. "Hercules."

Speidel, J. G., W. Buttonwood & Gorden Sts., Reading, Pa.

Toepper's Sons, Frank, 45 National Ave., Milwaukee, Wis.

Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 735.)

Western Mfg. Co., Sixth Ave. E. & S. Third St., Oskaloosa, Iowa.

Weston—See Union Elevator & Machine Co.

CRANES, Truck

(For applying to trucks to facilitate loading; For Truck Winches—See Winches, Truck)

Hendrickson Truck Crane Co., Peoples Gas Bldg., Chicago, Ill.

CRANK CASE BOLTS FOR FORDS—See Bolts, Special

CRANK CASE BREATHERS FOR FORDS—See Breathers, Crank Case

CRANK CASE SUPPORTS—See Brackets or Supports, Engine Repair for Fords

CRANK HANDLES—See Handles, Starting Crank

CRANK HOLDERS—See Holders, Starting Crank

CRANK LOCKS FOR FORDS—See Locks, Starting Crank

CRANK PIN GRINDERS — See Grinders, Crank Pin

CRANK PIN LATHES—See Lathes, Crank Pin

CRANK PIN TRUING TOOLS—See Tools, Crank Pin Truing

CRANK RATCHET PINS FOR FORDS—See Pins, Crank Ratchet

CRANK RELEASERS FOR FORDS—See Cranks, Safety Starting

CRANK SHAFT BUSHINGS FOR FORDS—See Bushings, Bronze

CRANK SHAFT COUNTERBALANCES FOR FORDS — See Counterbalances, Crankshaft

CRANK SHAFT GRINDING TOOLS—See Tools, Crank Pin Truing

CRANK SHAFT TURNING ATTACHMENTS—See Attachments, Lathe Crankshaft Turning

CRANK SHAFTS—See Crank Shafts, Finished and Machined

CRANKS, Safety Starting

(To prevent bodily injury from back kicks)

Cincinnati Ball Crank Co., 90 North St., Cincinnati, O. (See page 333.)

Oulton Mfg. Co., 144 Liverpool St. (E. Boston), Boston, Mass.

Shaw Mfg. Co., 126 Massachusetts Ave., Boston, Mass. (See page 1133.)

Whitcomb Machine Co., Monroe, Wis.

CRANKS, Safety Starting, for Ford

(To prevent bodily injury from back kicks)

Atlasta Specialty Mfg. Co., 2941-43 Locust St., St. Louis, Mo.

Automotive Exchange of America, Hippodrome Annex, Cleveland, O. (Sole Distributors for Palmer Auto Parts Co., Wooster, O.) "Ketch-A-Kick." (See page 725.)

Bear—See Robinson, E.

Bear Mfg. Co., E. 17th St. & First Ave., Rock Island, Ill.

Carson Mfg. Co., 9 S. Eighth St., Richmond

Ketch-A-Kick—See Automotive Exchange of America Co.

Lawco Kantkick—See Lawson Co.

Lawson Co., F. H., Dept. D, Cincinnati, O. "Lawco Kantkick." (See page 327.)

Miller Mfg. Co., E. L., 22 W. Third St., Kansas City, Mo. "Non-kick."

Non-Kick—See Miller Mfg. Co.

Palmer Auto Parts Co.—See Automotive Exchange of America Co.

Robinson, E., 2674 Atlantic Ave., Brooklyn, N. Y. "Bear."

Shipley & Co., Rochester, Ind.

Whitcomb Machine Co., Monroe, Wis.

CRANKSHAFTS, Finished or Machined

(For Crankshafts in the rough—See Forgings, Drop

Atlas Mfg. Co., County Line St. & Court Pl., Fostoria, O.

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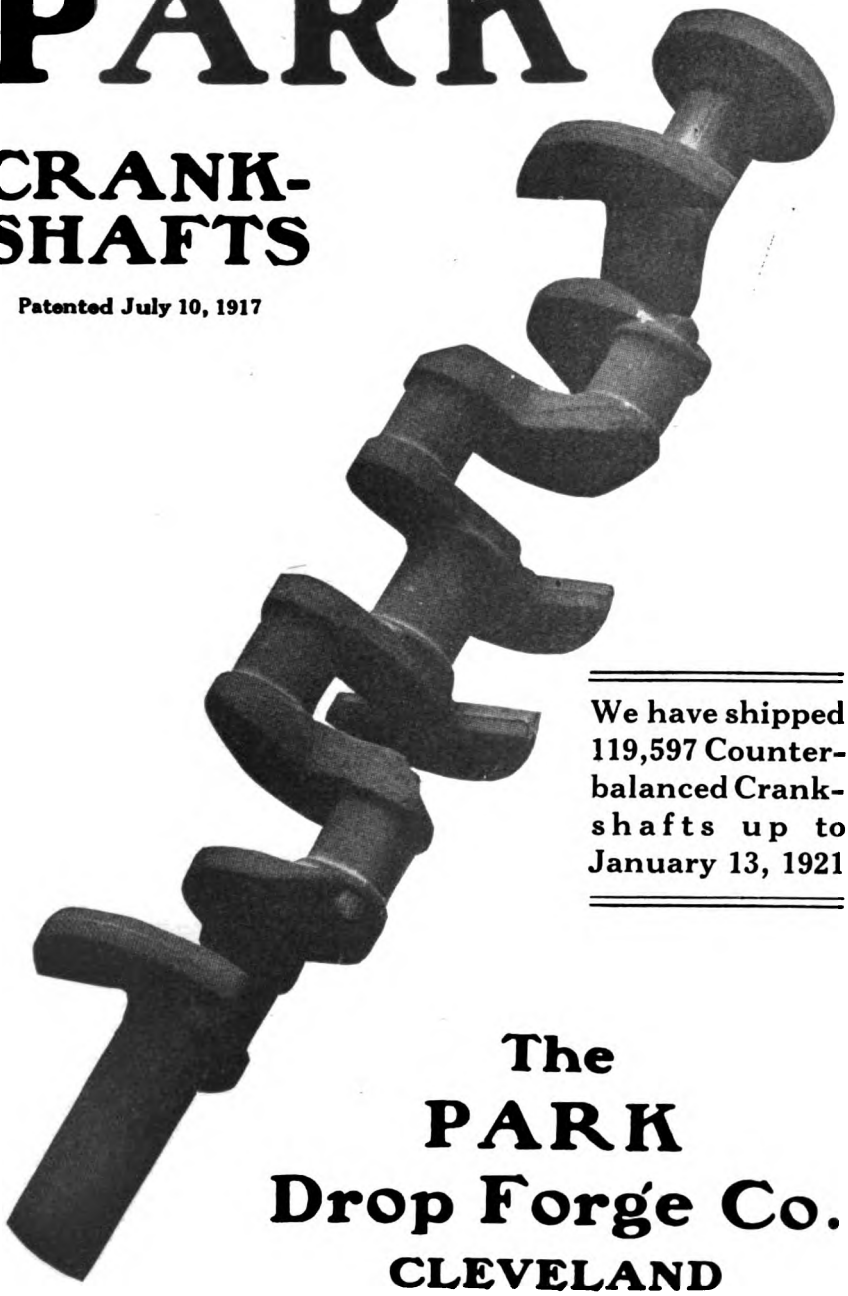
COUNTERBALANCED PARK CRANK-SHAFTS

Patented July 10, 1917



We have shipped 119,597 Counter-balanced Crank-shafts up to January 13, 1921

The PARK Drop Forge Co.
CLEVELAND

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CRANKSHAFTS, Finished or Machined (Continued)

Automobile Crankshaft Corp., Detroit, Mich. (See page 757.)
Gill & Sons Forge & Machine Works, P. H., Lorraine & Otsego Sts., Brooklyn, N. Y.
Jackson Motor Shaft Co., Jackson, Mich. (See page 187.)
Jefferson Forge Products Co., 12341 E. Jefferson Ave., Detroit, Mich.
Ladish Drop Forge Co., Cudahy, Wis. (See page 423.)
Leard Co., Wm., New Brighton, Pa. (See page 851.)
Michigan Crank Shaft Co., Lansing, Mich.
Holtrup Steel Products Co., Beaver Falls, Pa. (See page 919.)
Park Drop Forge Co., Cleveland, O. (See page 329.)
Savage Arms Corp., Sharon, Pa.
Standard Gauge Steel Co., Beaver Falls, Pa.
Sundberg Co., 1024 W. Kinzie St., Chicago, Ill.
Tindell-Morris Co., Eddystone, Pa.
Union Drop Forge Co., 358 W. Grand Ave., Chicago, Ill.
Union Switch & Signal Co., Swissvale, Pa.

CREEPERS OR REPAIR TRUCKS—See Trucks, Repair

CRIMPING MACHINES — See Machines, Crimping

CROWN FENDERS FOR FORDS—See Guards, Mud

CRUCIBLES, Metal Melting

Bartley Crucible Co., Jonathan, Oxford St., Trenton, N. J.
Bay State Crucible Co., Taunton, Mass.
Dixon Crucible Co., Joseph, Jersey City, N. J. (See page 469.)
Gautier & Co., J. H., Green & Essex Sts., Jersey City, N. J.
McCullough-Dalzell Crucible Co., Pittsburgh, Pa.
Ross-Tacony Crucible Co. (Tacony), Philadelphia, Pa.
Seidel, R. B., 1232-34 Callowhill St., Philadelphia, Pa.
Taunton Crucible Co., Taunton, Mass.
Taylor, Robert J., 1900 Callowhill St., Philadelphia, Pa.

CRUDE OIL MOTORS—See Engines, Motor Boat, Kerosene

CRUDE OIL ENGINES—See Engines, Motor Boat, Kerosene

CUFF PROTECTORS—See Protectors, Sleeve

CUP CYLINDER LUBRICATORS — See Lubricators, Cup Cylinder

CUP GREASES—See Greases, Cup

CUP WRENCHES—See Wrenches, Grease Cup

CUPS, CHASSIS LUBRICATING—See Systems, Chassis Lubricating

CUPS AND CONES, Ball

(See also Machine Work; also Screw Machine Products)

Ashley Machine Works, 724 University Ave., Rochester, N. Y.
B-N—See Burgess-Norton Mfg. Co.
Bossert Corp., Utica, N. Y. (See page 897.)
Buffalo Pressed Steel Co., Buffalo, N. Y. (See page 655.)
Burgess-Norton Mfg. Co., Geneva, Ill. "B-N." (See page 735.)
Crosby Co., Buffalo, N. Y. (See page 899.)
Frauham, Chas. N., 188 N. Colony St., Wallingford, Conn.
Michigan Screw Co., 506 S. Hosmer St., Lansing, Mich.
Oakes Co., Indianapolis, Ind. (See page 405.)
Peninsular Milled Screw Co., 6910 E. Lafayette St., Detroit, Mich.
Spacke Machine & Tool Co., 600 Madison Ave., Indianapolis, Ind.
Western Automatic Machine Screw Co., Elyria, O.
Worcester Pressed Steel Co., Worcester, Mass. (See page 919.)
Worcester Stamped Metal Co., Worcester, Mass. (See page 1019.)

CUPS, CYLINDER LUBRICATING — See Lubricators, Cup Cylinder

CUPS, GREASE—See Cups, Oil and Grease

CUPS, Oil and Grease

Airspring—See Hunter Pressed Steel Co.
Ajax—See City Iron Works & Machine Co.
Albany—See Cook's Sons, Adam.
American Injector Co., 1469 14th Ave., Detroit, Mich. "Star." "Surlock."
American Lubricator Co., Summit Ave. & Wabash Ry., Detroit, Mich.
American Stamping Co., 81 Burchard St., Battle Creek, Mich. "Klicket."
Arrow—See Long Bros.
Atlas—See Lunkenheimer Co.
Autoware Corp., 441 State St., Detroit, Mich. "Dann."
Bailey Co., W. J., Newark, N. J. "Climax."
Bassick Co., Bridgeport, Conn. (See page 333.)
Bay State Stamping Co., 380 Chandler St., Worcester, Mass. "Handy."
Bloom Flusher Co.—See Monson, Chas. S.
Bowen Products Corp., Auburn, N. Y. "Empress." (See page 331.)
Bowen Products Corp., 2760 W. Warren Ave., Detroit, Mich.
Bowen Products Corp., 983 17th Ave., S. E., Minneapolis, Minn. "Stahl."
Bridgeport—See Garrison Co.
Camden—See Lindholm Metal Stamping Co.
Carde Stamping & Tool Co., West Side, Saginaw, Mich.
Cardinol—See Lunkenheimer Co.
Champion Mfg. Co., 74th St. & Kimbark Ave., Chicago, Ill. "Oil-O-Matic." (See page 439.)
Chicago—See Ohio Injector Co.
City Iron Works & Machine Co., 520 S. Delaware Ave., Philadelphia, Pa. "Ajax." "Lard-Hex."
Climax—See Bailey Co.
Coe-Stapley Mfg. Corp., West Haven, Conn. "Lubrick." (See page 539.)
Cook's Sons, Adam, 708-10 Washington St., New York, N. Y. "Albany."

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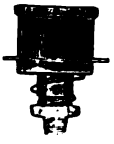
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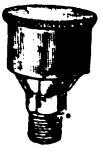
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CUPS, Oil and Grease (Continued)

Dann—See Autoware Corp.

Dawson Mfg. Co., 2012-18 Larrabee St., Chicago, Ill.

Detroit Lubricator Co., 5842-5986 Trumbull Ave., Detroit, Mich.

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.

Empress—See Bowen Products Corp.

Essex Brass Corp., 2000 Franklin St., Detroit, Mich.

Felix Mfg. Co., 4437 N. Clark St., Chicago, Ill.

Forc—See International Sales Corp.

Garrison Co., 215 River St., Bridgeport, Conn. "Bridgeport."

Gem—See Lunkenheimer Co.

Gits Bros. Mfg. Co., 1940 Kilbourne Ave., Chicago, Ill.

Gordon-Little Co., 122-24 N. Senate Ave., Indianapolis, Ind.

Greer, Frederic, 525 W. Van Buren St., Chicago, Ill.

Greist Mfg. Co., New Haven, Conn. "Noreca." (See page 1117.)

Hackett & Doolittle—See International Sales Corp.

Handy—See Bay State Stamping Co.

Hunter Pressed Steel Co., Pierce & Linden Sts., Lansdale, Pa. "Airspring."

Ideal—See Lunkenheimer Co.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

International Sales Corp., 311 Fairfield Ave., Bridgeport, Conn. (Sole Distributors for Hackett & Doolittle, South Norwalk, Conn. "Forc.") (See page 641.)

Jewel—See Lunkenheimer Co.

Justrite Mfg. Co., 2061-81 Southport Ave., Chicago, Ill.

K. M. Mfg. Co., Factories Bldg., Toledo, O.

Kelly & Jones Co., Greensburg, Pa.

Larg-Hex—See City Iron Works & Machine Co.

Lewis Searing Co. of Michigan, 287 Woodard Ave., Detroit, Mich.

Lindholm Metal Stamping Co., 107-15 Erie St., Camden, N. J. "Vale," "Camden," "Madeira," "McKee" "Simplex," "Reno."

Lion—See Lunkenheimer Co.

Little Wonder—See Tioga Mfg. Co.

Long Bros., Broadway & Buckeye St., Kokomo, Ind. "Arrow."

Lubrik—See Coe-Stapley Mfg. Co.

Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O. "Ideal," "Lion," "Pioneer," "Royal," "Sentinel," "Tiger," "Gem," "Cardinel," "Mite," "Majestic," "Jewel," "Owl," "Atlas," "Reliance," "Primo," "Wingo," "Securo," "Surety."

M & E—See Merchant & Evans Co.

McKee—See Lindholm Metal Stamping Co.

McRae & Roberts Co., 100-16 S. Campbell Ave., Detroit, Mich.

Madeira—See Lindholm Metal Stamping Co.

Madison-Kipp Co., 2227 Waubesa St., Madison, Wis.

Majestic—See Lunkenheimer Co.

Merchant & Evans Co., 2035 Washington Ave., Philadelphia, Pa. "M. & E."

Michigan Lubricator Co., Detroit, Mich. (See page 259.)

Milwaukee Valve Co., 139 Burrell St., Milwaukee, Wis.

Mite—See Lunkenheimer Co.

Monitor Lubricating Co., 1218 Chestnut St., Philadelphia, Pa.

Monson, Chas. S., Dime Bank Bldg., Detroit, Mich. (Sole Distributor for Bloom Flusher Co., Tiffin, O.)

National Brass Mfg. Co., 191-93 Mill St., Rochester, N. Y.

Newcup—See Newton Mfg. Co.

Newton Mfg. Co., Church St., Plainville, Conn. "Newcup."

Noreca—See Greist Mfg. Co.

Ohio Injector Co., Wadsworth, O. "Chicago."

Oil-O-Matic—See Champion Mfg. Co.

Owl—See Lunkenheimer Co.

Penberthy Injector Co., 1242 Holden Ave., Detroit, Mich. "Siren," "Samson," "Senator," "Saturn."

Penn Pressed Metal Co., Newton Ave. & Line St., Camden, N. J.

Pioneer—See Lunkenheimer Co.

Pneumatic Appliance Co., Williamson Bldg. Cleveland, O.

Powell Co., Wm., 2525 Spring Grove Ave., Cincinnati, O.

Primo—See Lunkenheimer Co.

Reliance—See Lunkenheimer Co.

Reno—See Lindholm Metal Stamping Co.

Rich Mfg. Co., 370 Atlantic Ave., Boston, Mass.

Richardson-Phenix Co., 122-28 Reservoir Ave., Milwaukee, Wis.

Royal—See Lunkenheimer Co.

Samson—See Penberthy Injector Co.

Saturn—See Penberthy Injector Co.

Securo—See Lunkenheimer Co.

Senator—See Penberthy Injector Co.

Sentinel—See Lunkenheimer Co.

Simplex—See Lindholm Metal Stamping Co.

Siren—See Penberthy Injector Co.

Stahl—See Bowen Products Corp.

Star—See American Injector Co.

Surety—See Lunkenheimer Co.

Surlock—See American Injector Co.

Tiger—See Lunkenheimer Co.

Tioga Mfg. Co., 3309 N. 12th St., Philadelphia, Pa. "Little Wonder."

Tucker, W. H. & C. F., Hartford, Conn. (See page 305.)

Vale—See Lindholm Metal Stamping Co.

Waterbury Mfg. Co., 236 Grand St., Waterbury, Conn.

Whitaker Mfg. Co., Chicago, Ill. (See page 1177.)

Wilkinson Co., Wm. H., Main St., West Medway, Mass.

Williams Valve Co., D. T., Spring Grove Ave. & Township St., Cincinnati, O.

Wingo—See Lunkenheimer Co.

CUPS, Oil and Grease, for Fords

Albany—See Cook's Sons, Adam.

Bowen Products Corp., Auburn, N. Y. "Empress." (See page 331.)

Cincinnati Screw Co., Twightwee, O. (See page 701.)

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.

Empress—See Bowen Products Corp.

Freeman Brass Works, 92 Bowery, New York, N. Y.

M. & E.—See Merchant & Evans Co.

Merchant & Evans Co., 2035 Washington Ave., Philadelphia, Pa. "M. & E."

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)

Tucker, W. H. & C. F., Hartford, Conn. (See page 305.)

Whitehouse Mfg. Co., 42 Elm St., Newark, N. J. (See page 637.)

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(For ordinary priming cups—See Cocks, Standard Pet)

Acme Brass Works, 8211 Collins Ave., Detroit, Mich.

Amalgamated Brass Co., Blanchester, O.

American Brass & Iron Co., Detroit, Mich. (See page 205.)

American Injector Co., 1469 14th Ave., Detroit, Mich.

American Lubricator Co., Summit Ave. & Wabash Ry., Detroit, Mich.

Becco—See Michigan Motor Specialties Co.

Brass Products Co., 3661-73 Palmer Ave., E., Detroit, Mich.

Brown-McLaren Mfg. Co., 5853-81 W. Fort St., Detroit, Mich.

Buckeye Iron & Brass Works, 324 E. Third St., Dayton, O.

Commonwealth Brass Corp., Detroit, Mich. (See page 1139.)

Detroit Brass & Malleable Works, Holden & Greenwood Aves., Detroit, Mich.

Detroit Lubricator Co., 5842-5986 Trumbull Ave., Detroit, Mich.

Dole Valve Co., 1923 Carroll Ave., Chicago, Ill.

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.

Greist Mfg. Co., New Haven, Conn. (See page 1117.)

Hancock Mfg. Co., 802 E. Henry St., Charlotte, Mich.

Hepburn—See Victor Brass Mfg. Co.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Kant-Klog—See Taylor Machine Co.

King, W. C., 911 Sargent St., Litchfield, Ill.

Lincoln Brass Works, Detroit, Mich. (See page 259.)

Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O.

McRae & Roberts Co., 100-16 S. Campbell Ave., Detroit, Mich.

Michigan Lubricator Co., Detroit, Mich. (See page 259.)

Michigan Motor Specialties Co., 120 Mt. Elliott Ave., Detroit, Mich. "Becco."

Morgan Mfg. Co., Court St., Keene, N. H. (See page 751.)

National Brass Mfg. Co., 191-93 Mill St., Rochester, N. Y.

Powell Co., Wm., 2525 Spring Grove Ave., Cincinnati, O.

Roberts Brass Mfg. Co., 5401 W. Fort St., Detroit, Mich.

Standard Brass Works, 2931 Wight St., Detroit, Mich.

Sterling & Skinner Mfg. Co., 2672 E. Grand Blvd., Detroit, Mich.

Taylor Machine Co., 7804 Carnegie Ave., Cleveland, O. "Kant-Klog."

Victor Brass Mfg. Co., 6813 Wade Park Ave., Cleveland, O. "Hepburn."

CUPS AND COVERS, Spring Leaf Lubricating

(Oil cups or boxes, felt oilers or lubricant retaining covers to be applied to springs to keep them lubricated and so eliminate squeaks; for Spring Lubricating Strips—See Strips, Spring Leaf Lubricating; for Spring Leaf Separating Tools—See Tools, Spring Leaf Separating.)

Babbitt Spring Oiler Co., 11223 Superior Ave., Cleveland, O.

Bailey Co., W. J., Newark, N. J.

Brown Spring Oiler Co., 6911 Carnegie Ave., Cleveland, O. "Relio."

Buxton & Owen, 30 N. La Salle St., Chicago, Ill. "Dilso." (See page 335.)

Dilso—See Buxton & Owen.

Dunn Mfg. Co., A. C., 1118-26 Third Ave., S., Minneapolis, Minn. "Sure-On."

Federal Co., Citizens Bank Bldg., South Haven, Mich. "Van."

Federal Stamping Co., Holland, Mich.

G. L. W. Spring Oiler Co., Savoy Theater Bldg., San Diego, Cal. (See page 335.)

Grus Leaf Spring Oiler Co., 4504 W. Harrison St., Chicago, Ill.

Hastings Mfg. Co., 36 Mill St., Hastings, Mich. (See page 567.)

Improved Gauge Mfg. Co., 105 Canal St., Syracuse, N. Y. (See page 441.)

Jeavons Spring Lubricator, 1607 Prospect Ave., Cleveland, O. (See page 335.)

K. K. K.—See Killen Kemical Ko.

Killen Kemical Ko., Lansing, Mich. "K. K. K." (See page 263.)

Lazarus Mfg. Co., 224 High St., Cleveland, O.

Lazco—See Lazarus Mfg. Co.

Relio—See Brown Spring Oiler Co.

Renfro, John F., 1834 Broadway, New York, N. Y.

Sterling Mfg. Co., 2845-53 Prospect Ave., Cleveland, O.

Sure-On—See Dunn Mfg. Co.

Van—See Federal Co.

Woodworth Mfg. Co., 1-29 Starr Ave., Binghamton, N. Y.

Wright Cover Mfg. Co., 1413 S. Michigan Ave., Chicago, Ill. (See page 317.)

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(Oil cups or boxes, felt oilers or lubricant retaining covers to be applied to springs to keep them lubricated and so eliminate squeaks)

Bowen Products Corp., Auburn, N. Y. (See page 331.)

Brown Spring Oiler Co., 6911 Carnegie Ave., Cleveland, O. "Relio."

Grus Leaf Spring Oiler Co., 4504 W. Harrison St., Chicago, Ill.

Jeavons Spring Lubricator, 1607 Prospect Ave., Cleveland, O. (See page 335.)

Jessop & Thompson, 1421 S. Michigan Ave., Chicago, Ill. (Sole Distributors for Mobile Mfg. Co., Chicago, Ill.)

Mobile Mfg. Co.—See Jessop & Thompson.

Relio—See Brown Spring Oiler Co.

Retco—See Tupper & Co.

Tupper & Co., R. E., Sandwich, Mass. "Retco."

Waters Bros. Co., 6543 Greenview Ave., Chicago, Ill.

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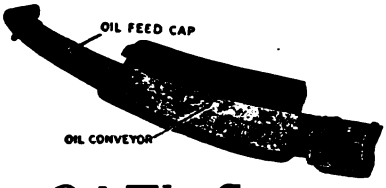

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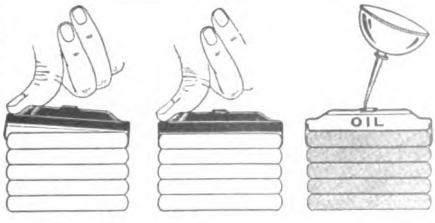

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CURB BOXES—See Boxes, Standard and Curb

CURING BAGS—See Bags, Steam Tire Curing

CURLED HAIR—See Hair, Upholstery

CURRENT RECTIFIERS—See Rectifiers, Alternating Current

CURTAIN CASES FOR FORDS—See Cases, Curtain

CURTAIN CLIPS—See Clips, Curtain

CURTAIN FASTENERS—See Fasteners, Curtain

CURTAIN LIGHTS—See Lights, Curtain; also Windows, Glass Curtain

CURTAIN OPENERS—See Openers, Curtain

CURTAIN OPENING FITTINGS—See Openers, Curtain

CURTAIN ROLLERS—See Rollers, Curtain

CURTAIN WINDOWS—See Lights, Curtain; also Windows, Glass Curtain

CURTAINS, Special Top

(For ordinary curtains—See Tops, Automobile)

Brackbill Co., B. F., 1953 Laveer St., Philadelphia, Pa.

Jiffy Auto Curtain Co., 404-06 E. Jefferson Ave., Detroit, Mich.

Laroche, J. P., 5918-20 S. Ashland Ave., Chicago, Ill.

Shugers Mfg. Co., 1002-04 S. Los Angeles St., Los Angeles, Cal. (See page 337.)

CURTAINS, Special Top, for Fords

(For ordinary curtains—See Tops, Special)

Cleveland Top & Specialty Co., Carnegie & E. 65th Sts., Cleveland, O.

Copp Co., George W., 518 W. 58th St., New York, N. Y. (See page 323.)

Dafoe-Eustice Co., 4042 W. Jefferson Ave., Detroit, Mich. "Ustus."

Liberty Top & Tire Co., 123 E. Eighth St., Cincinnati, O.

R-E—See Roose Mfg. Co.

Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E." (See pages 129, 151, 325 and 327.)

Ustus—See Dafoe-Eustice Co.

CUSHIONS, BACK REST—See Rests, Cushion

CUSHIONS, Radius Rod for Fords

Warren & Co., Frank R., 2214 Michigan Ave., Chicago, Ill.

CUSHIONS, Special Seat

(For ordinary cushions—See Bodies; also Tops)

Brackbill, Chas., 2419 N. Broad St., Philadelphia, Pa.

Busse & Co., W. A., 2700 W. Lake St., Chicago, Ill.

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 545.)

Freedman Upholstery Co., 615 E. 47th St., Chicago, Ill. "Orno."

Interlocked Spring Seat Corp., 4801-19 S. Maplewood Ave., Chicago, Ill.

Kant Sag—See Modern Upholstery Co.

Laroche, J. P., 5918-20 S. Ashland Ave., Chicago, Ill.

Modern Upholstery Co., 926-28 St. Aubin Ave., Detroit, Mich. "Kant Sag." (See page 337.)

Orno—See Freedman Upholstery Co.

Perfection—See Pneumatic Mfg. Co.

Pneumatic Mfg. Co., 124-28 Atlantic Ave., Brooklyn, N. Y. "Perfection."

Snell Co., Charles W., 321 S. Jefferson St., Chicago, Ill.

CUSHIONS, Special Seat for Fords

Aero—See Detroit Spring Co.

All-Wanta—See Fort Pitt Bedding Co.

Detroit Spring Co., 61 E. Jefferson Ave., Detroit, Mich. "Aero."

Fort Pitt Bedding Co., N. S., Pittsburgh, Pa. "All-Wanta." (See page 337.)

Freedman Upholstery Co., 615 E. 47th St., Chicago, Ill. "Orno."

Hummer Auto Top Works, Tenth & Lincoln Sts., Chicago Heights, Ill.

Interlocked Spring Seat Corp., 4801-19 S. Maplewood Ave., Chicago, Ill.

Orno—See Freedman Upholstery Co.

Tower & Co., Cohasset, Mass.

CUT-OUT PEDALS—See Pedals, Horn

CUT-OUTS, Automatic Ignition, for Fords

(For automatically breaking the ignition circuit when motor stops with switch on)

Ewing & Ewing, Jeromeville, O.

CUT-OUTS, MUFFLER—See Valves, Muffler Cut-Out; also Pedals, Horn and Cut-Out

CUTOUTS, Reverse Current

(For automatically connecting the generator to the battery when the voltage is high enough to charge the battery and disconnecting it when the voltage is too low)

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CUTTER GRINDERS—See Grinders, Reamer

CUTTERS, BAR—See Cutters, Rod and Bar

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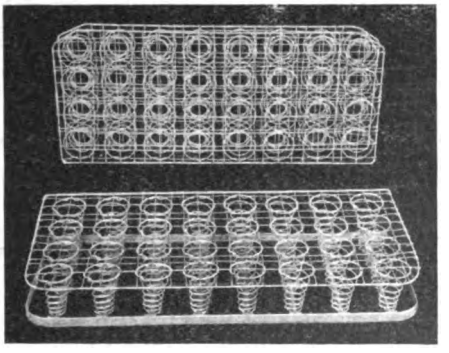

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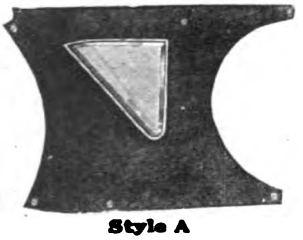

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CUTTERS, Brake Lining

Peck, Stow & Wilcox Co., Southington, Conn "Pexto."

Pexto—See Peck, Stow & Wilcox Co.

CUTTERS, Circular Glass

(For cutting lamp or instrument glasses)

Goodell-Pratt Co., Greenfield, Mass.

Millers Falls Co., Millers Falls, Mass. "Star."

Red Devil—See Smith & Hemenway.

Shawver Co., rear 21 W. Pleasant St., Springfield, O.

Smith & Hemenway, 130 Colt St., Irvington, N. J. "Red Devil."

Star—See Millers Falls Co.

CUTTERS, GASKET—See Cutters, Washer and Gasket

CUTTERS, GLASS—See Cutters, Circular Glass

CUTTERS, LINING — See Cutters, Brake Lining

CUTTERS, Milling

Advance Machinery Co., Van Wert, O.

American Machine Products Co., 18th & Howard Sts., Detroit, Mich. "Ampco."

Ampco—See American Machine Products Co.

Barber-Colman Co., Rockford, Ill.

Becker Milling Machine Co., 53 Franklin St., Boston, Mass.

Blancke Co., L. C., 10-12 Thomas St., New York, N. Y. (Sole Distributors for Blancke Twist Drill & Tool Co., Taunton, Mass.)

Blancke Twist Drill & Tool Co.—See Blancke Co.

Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.

Cleveland Twist Drill Co., Cleveland, O. (See page 369.)

Clough, R. M., Tolland, Conn.

Cowles Tool Co., 2086-96 W. 110th St., Cleveland, O.

Davidson Tool Mfg. Co., 118-22 Maiden Lane, New York, N. Y.

Detroit Twist Drill Co., Detroit, Mich. (See page 955.)

Detroit Reamer & Tool Co., Detroit, Mich. (See page 925.)

Goddard & Goddard Co., 4724 Hastings St., W., Detroit, Mich.

Haynes Stellite Co., Citizens Bank Bldg., Kokomo, Ind. "Stellite."

Hergi Mfg. Co., Bridgeport, Conn.

Holmes Special Tool Co., 38 Canal St., New Haven, Conn.

Illinois Tool Works, 154 E. Erie St., Chicago, Ill.

Ingersoll Milling Machine Co., Douglas & Willoughby Sts., Rockford, Ill.

Keystone Reamer & Tool Co., Millersburg, Pa. (See page 791.)

Lincoln Twist Drill Co., Arlington St., Taunton, Mass.

McCarthy Drill & Tool Corp., 30 Church St., New York, N. Y.

Morse Twist Drill & Machine Co., 163 Pleasant St., New Bedford, Mass.

National Tool Co., W. 112th St. & Madison Ave., Cleveland, O.

National Twist Drill & Tool Co., 6522 Brush St., Detroit, Mich.

New Britain Mfg. Co., 5 Harvard St., New Britain, Conn.

Parker Machine Co., 221 High St., Boston Mass.

Perelstrous & Storms Tool Corp., 42 Broadway, New York, N. Y.

Pittsburgh Saw & Mfg. Co., 32d & Smallman Sts., Pittsburgh, Pa.

Polk & Son Co., A. J., Millersburg, Pa.

Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 339.)

Production Tool Co. of America, Le Grande & Foster Aves., Detroit, Mich.

Republic Tool & Mfg. Co., 1399-1401 W. Ninth St., Cleveland, O. (Jobbers.) (See page 369.)

Screw Machine Products Corp., 1012 Eddy St., Providence, R. I.

Scott-Spencer Automatic Tool Co., Cincinnati, O.

Standard Tool Co., 6900-24 Central Ave., Cleveland, O.

Stellite—See Haynes Stellite Co.

Tabor Mfg. Co., 1740 Hamilton St., Philadelphia, Pa. "Taylor-Newbold."

Taylor-Newbold—See Tabor Mfg. Co.

Thurston Mfg. Co., 140 Benedict St., Providence, R. I.

Tindel-Morris Co., Eddystone, Pa.

Union Twist Drill Co., Chestnut Hill Ave., Athol, Mass.

Watervliet Tool Co., 25 N. Pearl St., Albany, N. Y.

Whitney Mfg. Co., Hartford, Conn. (See page 231.)

CUTTERS, PISTON RING GROVE CARBON—See Tools, Piston Ring Grove Cleaning

CUTTERS, Rod and Bar

(Hand Power)

Armstrong-Blum Mfg. Co., 333 N. Francisco Ave., Chicago, Ill. "Marvel."

Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.

Burgess Machine Co., 45 Chestnut St., New Haven, Conn.

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Roberts Mfg. Co., Boston, Mass.) "Victor." (See page 688.)

Marvel—See Armstrong-Blum Mfg. Co.

Merwin Mfg. Co., 310-20 E. 19th St., Erie, Pa. "Vulcan."

Roberts Co.—See Jonas, C. N. & F. W.

Schatz Mfg. Co., 17 Fairview Ave., Poughkeepsie, N. Y.

Victor—See Jonas, C. N. & F. W.

Vulcan—See Merwin Mfg. Co.

Wallace Supplies Mfg. Co., 420 Orleans St., Chicago, Ill.

CUTTERS, ROTARY—See Saws and Cutters, Rotary

CUTTERS, Washer or Gasket

Bonney Vise & Tool Works, Allentown, Pa. "Cooper." (See page 437.)

Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.

Cooper—See Bonney Vise & Tool Works.

Goodell-Pratt Co., Greenfield, Mass.

Hartson, C. E., 120 Congress Ave., Rochester, N. Y.

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ST. PAUL, MINN....Robinson, Cary & Sands Co.
DENVER, COLO.,
Hendrie & Bolthoff Mfg. & Supply Co.

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CUTTERS, Washer or Gasket (Continued)

Hoggson & Pettis Mfg. Co., 141 Brewery St., New Haven, Conn.

Kraeuter & Co., Newark, N. J. (See page 711.)

Mound Tool Co., Dept. D, Seventh & Hickory Sts., St. Louis, Mo. (See page 1109.)

Rose Mfg. Co., J. A., 105 S. Kansas Ave., Hastings, Neb.

Smith, Otis A., Rockfall, Conn.

Stortz & Son, John, 210-12 Vine St., Philadelphia, Pa.

CUTTING COMPOUNDS—See Lubricants, Cutting

CUTTING DIES—See Taps and Dies

CUTTING LUBRICANTS—See Lubricants, Cutting

CUTTING OILS—See Lubricants, Cutting

CUTTING STEEL—See Steel, Self-Hardening Cutting

CYANIDE HARDENING — See Treating, Heat

CYLINDER BOLTS FOR FORDS — See Bolts, Special

CYLINDER BORING MACHINES—See Machines, Boring

CYLINDER CASTINGS — See Castings, Gray Iron

CYLINDER CLEANING COMPOUNDS—See Compounds, Carbon Removing

CYLINDER CLEANING MACHINES—See Machines, Engine Decarbonizing

CYLINDER GAGES—See Gages, Cylinder

CYLINDER GRINDERS—See Grinders, Cylinder

CYLINDER GRINDING ATTACHMENTS—See Attachments, Lathe Cylinder Grinding

CYLINDER HEAD BOLTS FOR FORDS—See Bolts, Special

CYLINDER-HEAD GASKETS FOR FORDS—See Gaskets, Cylinder-Head

CYLINDER HEADS FOR FORDS — See Heads, Special Cylinder

CYLINDER JIGS FOR FORDS—See Reamers and Jigs, Cylinder

CYLINDER LUBRICATING CUPS—See Lubricators, Cup Cylinder

CYLINDER LUBRICATORS—See Lubricators, Cup Cylinder

CYLINDER OILS—See Oils

CYLINDER REAMERS FOR FORDS—See Reamers and Jigs, Cylinder

CYLINDER REBORING MACHINES—See Machines, Cylinder Reboring; for Cylinder Reboring Tools—See Tools, Portable Cylinder Reboring

CYLINDER REBORING TOOLS — See Tools, Portable Cylinder Reboring

CYLINDER REBORING TOOLS FOR FORDS—See Tools, Cylinder Reboring

CYLINDERS, Finished or Machined

(For cylinder castings in the rough—See Castings, Gray Iron)

Detroit Foundry Co., 2642 N. Grand Blvd., Detroit, Mich.

Ferro Machine & Foundry Co., 47 Hubbard Ave., Cleveland, O.

Fulton Foundry & Machine Co., 25 Furman St., Brooklyn, N. Y.

Stroh Castings Co., 80 Chene St., Detroit, Mich.

Wainwright Engineering Corp., Connersville, Ind. (See page 705.)

CYLINDERS, Regrinding of

(See also Welding, Autogenous; also Machine Work)

Acme Mfg. Works, 660 Turk St., San Francisco, Cal.

Adapt Machinery Co., 1624 S. Wabash Ave., Chicago, Ill.

American Engine & Airplane Co., 2869 W. Pico St., Los Angeles, Cal.

Anderson, H. S., 211-19 N. Sheridan Ave., Pittsburgh, Pa.

Arizona Machinery Mfg. Co., 222-26 N. Seventh Ave., Phoenix, Ariz.

Arlington Machine Works, 668-74 Jenks St., St. Paul, Minn.

Auto Engine Works, University Ave. & Griggs St., St. Paul, Minn.

Bernhard & Turner Automobile Co., 506-12 W. Seventh St., Des Moines, Ia.

Blettner, Geo. H., 1401-05 Jackson Blvd., Chicago, Ill.

Bracken Cylinder Regrinding Co., Harry L., 150 Social Hall Ave., Salt Lake City, Utah.

Bridgeport Piston Ring Co., Connecticut Ave. & Third St., Bridgeport, Conn.

Bu-Nite—See Butler Mfg. Co.

Buffalo Cylinder Grinding Co., 887 Main St., Buffalo, N. Y.

Burt Motor Car Co., W. J., Pico & Hope Sts., Los Angeles, Cal.

Butler Mfg. Co., 3234 W. Washington St., Indianapolis, Ind. "Bu-Nite."

Charter Oak Machine Co., 438 Asylum St., Hartford, Conn.

Club Auto Parts & Machine Co., 204-06 Chester St., Buffalo, N. Y.

Cook Auto Machine Co., J. B., 247 Poplar Ave., Memphis, Tenn.

Demster, W. R., 1316-18 Oak St., Kansas City, Mo.

Diebel, A. J., 976 Woodward Ave., Detroit, Mich.

Doerr Motor Works, Louis J., 18th & Allen Sts., St. Louis, Mo.

Du Bois Machine Shop, 118-28 Hudson Ave., Albany, N. Y.

Durham Co., P. J., 244 W. 49th St., New York, N. Y. (See page 517.)

Dyer Co., G. H., 155 Brookline St., Cambridge, Mass.

Edwards Motor Co., 311-15 S. 12th St., Minneapolis, Minn.

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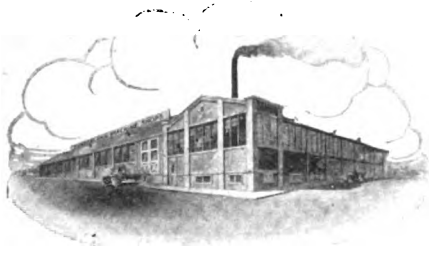

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CYLINDERS, Regrinding of (Continued)

Egge Machine Co., E. N., 730 Broadway, Plainview, Tex.
Emerson Mfg. Co., 3529 Gratiot Ave., Detroit, Mich.
Engine Service Co., Bank St. & Western Ave., Cincinnati, O.
Evarts Machine Co., 33 Francis Ave., Hartford, Conn.
Fargo Motor Car Co., 1164-66 W. 22d St., Chicago, Ill.
Frostholm Bros., 1809 Park St., Syracuse, N. Y.
Gabel Bros., 35 Third St., Fond du Lac, Wis.
Goodin Motor Service Corp., 333 S. Lawrence St., Wichita, Kans.
Grand Tool & Machine Works, 161 Grand St., New York, N. Y.
Green Engineering Co., Main St. & Burns Ave., Dayton, O.
H. & H. Machine Co., 4276 Easton Ave., St. Louis, Mo.
Hanke Iron & Wire Works, Albany, Grand & Chicago Aves., Chicago, Ill.
Hawkeye Truck Co., Sioux City, Ia. (See page 51.)
Heine Machine Works, 4160 Minnehaha Ave., Minneapolis, Minn.
Hercules Welding & Machine Co., 223-25 N. 16th St., Philadelphia, Pa.
Hingley, J. A., 1816-18 Blake St., Denver, Colo.
Houpert Machine Co., Harris Ave. & Marion St., Long Island City, N. Y. (See page 707.)
Iowa Cylinder & Piston Co., Lattner Bldg., Cedar Rapids, Ia.
Jahn Grinding Works, 709 W. Second St., Davenport, Iowa.
Jahns, W. H., 2662 Lacy St., Los Angeles, Cal.
Kemp Machine Works, 1215 S. Franklin St., Muncie, Ind.
Kinslow Machine Works, H. M., 413-15 W. Fifth St., Santa Ana, Cal.
Lake Sales Co., 1947 Broadway, New York, N. Y. (See page 825.)
Litters Motor Machine Shop, 240 N. Fourth St., Columbus, O.
Lombardi Motor Car Co., 67-71 Minerva St., Derby, Conn.
McCadden Machine Works, 316 Sixth Ave. N., St. Cloud, Minn.
Merritt Co., S. Whyle, 516 Fifth Ave., New York, N. Y.
Midland Machine Works, 221-25 S. Third St., Muskogee, Okla.
Milwaukee Cylinder Grinding Co., Humboldt & Concordia Aves., Milwaukee, Wis.
Modern Auto Repair Co., 4605 Olive St., St. Louis, Mo.
Modern Electric & Machine Co., 936-40 Fort Wayne Ave., Indianapolis, Ind.
Modern Tool, Die Machine Co., 214-20 N. Fourth St., Columbus, O. (See page 1145.)
Motor Products & Engineering Co., 1917 E. 61st St., Cleveland, O.
National Welding & Mfg. Co., 1418-30 Niagara St., Buffalo, N. Y.
Neupert Mfg. Co., 82 Lark St., Buffalo, N. Y. (See page 341.)
Nilson-Miller Co., 1300-06 Hudson St., Hoboken, N. J.
Noonan Mfg. Co., D. R., Paris, Ill.
Odom Bros. Co., E. H., 19 James St., Atlanta, Ga.
Park Machine Co., 176 W. Third St., St. Paul, Minn.
Patch Co., E. A., 17 Ipswich St., Boston, Mass.
Peterson Machine Co., 34 E. 29th St., Brooklyn, N. Y.
Pondelick Bros., 215 S. Leavitt St., Chicago, Ill.
Precision Machine Co., Riggs Bldg., Washington, D. C.
Rabaus & Toeller, Cedar Rapids, Ia.
Ryser Machine Works, 931-35 E. 43d St., Chicago, Ill.
St. Paul Auto Cylinder Grinding Co., 1153 Rice St., St. Paul, Minn.
Salter Motor Mfg. Co., 1516-18 Oakland Ave., Kansas City, Mo
Salyer Tool Works, 328 Washington Ave., Newark, N. J.
Saucke Bros., 47 Franklin St., Rochester, N. Y.
Schmidt Co., B. L., 417 W. Fourth St., Davenport, Ia.
Scored Cylinder Works, 433 Golden Gate Ave., San Francisco, Cal.
Sloat, E. R., 5930 Woodward Ave., Detroit, Mich.
Sprigg, Z. T., 1942 Arapahoe St., Denver, Colo.
Stafford Machine Works, 2201-05 Campbell Ave., Kansas City, Mo.
Standard Tool & Engineering Co., Indiana & Lafayette Sts., South Bend, Ind.
Standard Welding & Machine Co., 416 E. Second St., Des Moines, Iowa.
Sterling Engine Co., 333 S. Clinton St., Chicago, Ill.
Sunderland Machine Shops, Omaha, Neb. (See page 341.)
Sure Pressure Acetylene Generator Co., 1010-12 W. Main St., Oklahoma City, Okla.
Swan, H. O. Mattoon, Ill.
Taylor Mfg. Co., 10 Portland St., Cambridge, Mass.
Tranter Mfg. Co., 105 Water St., Pittsburgh, Pa. (See page 341.)
Trindl Co., Wabash Ave. & 29th St., Chicago, Ill. (See page 341.)
U. S. Hammered Piston Ring Co., 1206 S. Grove St., Irvington, N. J.
Vulcan Brazing & Machine Co., 1630-32 Vine St., Philadelphia, Pa.
Wadell Motor Corp., 661-71 Freylinghuysen Ave., Newark, N. J.
Waterbury Welding Co., 1147 South Main St., Waterbury, Conn. (See page 613.)
Western Fixture Co., 573-75 E. Water St., Milwaukee, Wis.
White Auto Repair Co., 502 E. Main St., Chanute, Kans.
Wilkie's Garage & Machine Works, 208 W. Third St., Winona, Minn.
Woodruff Engineering Co., 5315 Euclid Ave., Cleveland, O.
Woodward, Geo. H., 1455 Bush St., San Francisco, Cal.
Youngstrom Co., Carl, 417 12th St., Des Moines, Ia.

CYLINDERS, Repairing of Scored

(See also Welding; also Cylinders, Regrinding of)

Automotive Engineering Co., Dayton, O.
Blanchette Welding Co., 149-51 S. Broadway, Denver, Colo.
Buckeye Welding & Repair Shop, 133 Water St., Lima, O.
Cincinnati Welding & Repair Co., 410-12 Richmond St., Cincinnati, O.
Day Welding Co., 43 Sumner Ct., N. W., Washington, D. C.
Eagle Machine Co., 24 N. Noble St., Indianapolis, Ind.

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Emerson Mfg. Co., 3529 Gratiot Ave., Detroit, Mich.

Heine Machine Works, 4160 Minnehaha Ave., Minneapolis, Minn.

Hoag Welding Co., 31 E. Court St., Springfield, Mass.

Lawrence & Co., L., 292 Halsey St., Newark, N. J.

Pondelick Bros., 215 S. Leavitt St., Chicago, Ill.

R. I. Score Filling Co., Providence, R. I.

Trindl Co., Wabash Ave. & 29th St., Chicago, Ill. (See page 341.)

DASH CARBURETOR CONTROLS FOR FORDS—See Controls, Dash Carburetor

DASH CONTROLS—See Controls, Dash and Steering Column Carburetor

DASH CONTROLS FOR FORDS—See Controls. Dash Carburetor

DASH COWLS FOR FORDS—See Cowls, Dash

DASHBOARD GAGES—See Gages

DASHBOARD LAMPS—See Lamps, Electric Dash

DASHBOARD MIRRORS—See Mirrors, Adjustable

DASHBOARD PURCHASE REGISTERS—See Registers, Dashboard Purchase

DASHBOARD VENTILATORS—See Ventilators, Dashboard

DASHBOARDS—See Dashes

DASHES, Metal

(Pressed or stamped metal dash or instrument boards)

Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representative.) (See page 345.)

Hayes Mfg. Co., 4525 Maybury Grand Ave., Detroit, Mich.

Heil Co., 1136-40 Montana Ave., Milwaukee, Wis. (See page 147.)

Hotchkiss Metal Form Co., 16 Jarvis St., Binghamton, N. Y. (See page 345.)

Parish Mfg. Co., Reading, Pa. (See page 431.)

Sheet Steel Products Co., Bryan, O.

Western Metal Specialty Co., 1919 St. Paul Ave., Milwaukee, Wis.

DASHES, Wood

(Laminated wood dash or instrument boards)

Almapee Veneer & Seating Co., Algoma, Wis.

American Veneer Co., 15th & Clinton Sts., Hoboken, N. J.

Bay City Auto Body Co., Center Ave. & Pere Marquette R. R., Bay City, Mich.

Builders Mfg. Co., 828-30 N. Wells St., Chicago, Ill. (See page 491.)

Dann Bros. & Co., 84 Franklin St., New Haven, Conn.

Detroit Auto Dash Co., 1501 E. Philadelphia Ave., Detroit, Mich.

Eggers Veneer Seating Co., F., 19th St. & Jefferson Ave., Two Rivers, Wis.

Grand Rapids Veneer Works, 800-900 Front St., Grand Rapids, Mich.

Hanson-Ward Veneer Co., Bay City, Mich. (See page 345.)

Hartford Pattern & Model Co., 120 Allyn St., Hartford, Conn.

Haskelite Mfg. Corp., 133 W. Washington St., Chicago, Ill.

Louisville Veneer Mills, 1100-40 Fulton St., Louisville, Ky.

New Jersey Veneer Co., 258 W. Railway Ave., Paterson, N. J.

Roddis Lumber & Veneer Co., Marshfield, Wis.

Standard Cabinet Mfg. Co., E. Canal St., Peru, Ind.

Wisconsin Cabinet & Panel Co., Beacon Ave., New London, Wis.

DAZZLE DIMMERS—See Dimmers, Glare

DEALER PLANS, MERCHANDISING—See Plans, Dealer Merchandising

DECALCOMANIA MONOGRAMS — See Transfers, Decalcomania

DECALCOMANIA TRANSFERS — See Transfers, Decalcomania

DECARBONIZING MACHINES—See Machines, Engine Decarbonizing

DEFLATING TOOLS—See Tools, Tire Deflating

DEFLATORS, TIRE—See Tools, Tire Deflating; also Machines, Tube Deflating

DEFLECTING LENSES—See Dimmers or Shades, Headlight

DEFLECTORS, Exhaust, for Fords

(Stamped steel attachment for end of exhaust pipe to deflect the exhaust gases from spare tires or any part of a car)

Corcoran Mfg. Co., 4634 Spring Grove Ave., Cincinnati, O.

Hudson Motor Specialties Co., 1934 Arch St., Philadelphia, Pa.

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)

Worthington, A. P., 700 N. Main St., Los Angeles, Cal.

DEFLECTORS, Heat, for Fords

(Rubber or metal deflectors to attach to front floor board to prevent heat from motor entering body)

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for "Presto" Deflectors.) (See page 275.)

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 321.)

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DEFLECTORS, Heat, for Fords (Continued)

Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 545.)

Franklin Rubber Co., 134 Federal St., Boston, Mass.

Home Light Co., 3353 Milwaukee Ave., Chicago, Ill.

Lockwood Mfg. Co., Kansas City, Mo. (See page 323.)

Metal Specialties Mfg. Co., 338-52 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 547.)

Presto—See Metal Specialties Mfg. Co.

DEFLECTORS, LIGHT—See Dimmers or Shades

DEFLECTORS, MUD, FOR FORDS—See Pans, Radiator Splash

DEFLECTORS, Oil, for Fords

Perfector Mfg. Co., 206 S. Spring St., Los Angeles, Cal.

DEFLECTORS, WIND—See Shields, Auxiliary Wind

DEMOUNTABLE DISC WHEELS—See Wheels, Demountable Disc

DEMOUNTABLE HUBS FOR FORDS—See Hubs, Demountable

DEMOUNTABLE RIM BOLTS—See Bolts, Special Demountable Rim

DEMOUNTABLE RIM CONTRACTING TOOLS—See Tools, Demountable Rim Contracting

DEMOUNTABLE RIM SHIMS—See Plates, Demountable Rim Wedge

DEMOUNTABLE RIM WEDGE PLATES—See Plates, Demountable Rim Wedge

DEMOUNTABLE RIMS—See Rims, Removable

DEMOUNTABLE RIMS FOR FORDS—See Rims, Demountable

DEMOUNTABLE WHEEL CARRIERS—See Holders or Carriers, Spare Wheel

DEMOUNTABLE WHEELS—See Wheels, Wire

DEMOUNTABLE WHEELS FOR FORDS—See Wheels, Demountable; also Hubs, Demountable

DENATURED ALCOHOL—See Alcohol, Denatured

DENATURED ETHER—See Ether, Denatured

DEPTH GAGES—See Gages, Depth

DESIGNERS, Special Machinery and Tool

Knapp Engineering Corp., Arthur, 19 W. 44th St., New York, N. Y. (See page 881.)

Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 339.)

Service Engineering Co., 25 Church St., New York, N. Y.

Taft-Peirce Mfg. Co., Woonsocket, R. I. (See page 849.)

DETACHABLE MOTORS, MOTOR BOAT—See Engines, Motor Boat Outboard

DETACHABLE RIMS—See Rims, Removable

DEVICES, KEROSENE, FOR FORDS—See Carburetors, Kerosene; also Heaters, Mixture; also Manifolds, Intake and Exhaust

DIALS, CLOCK—See Dials, Luminous

DIALS, Luminous

(Concerns who illuminate clock, gage and meter dials; for Luminous Materials—See Paints, Luminous.)

General Etching & Mfg. Co., 312 S. Hamilton Ave., Chicago, Ill.

Luma—See Radium Dial Co.

Radium Dial Co., Forbes & Meyran Aves., Pittsburgh, Pa. "Luma."

Radium Luminous Material Corp., 58 Pine St., New York, N. Y. "Undark." (See page 347.)

Undark—See Radium Luminous Material Corp.

DIALS, SPEEDOMETER—See Dials, Luminous

DIE CAST BEARINGS—See Castings, Die

DIE CAST BUSHINGS—See Bushings, Bronze and Die Cast

DIE CASTINGS—See Castings, Die

DIE CUTTING MACHINES—See Machines, Die Cutting

DIE STOCKS—See Stocks, Die

DIES, FORGING—See Dies, Jigs, Tools and Fixtures

DIES, JIGS, TOOLS and FIXTURES

Ability Tool & Mfg. Co., 4100 Lincoln Ave., Chicago, Ill.

Acme Electric & Mfg. Co., 203 St. Clair St., N. E., Cleveland, O.

Acme Engineering & Mfg. Co., 355 Union Park Ave., Chicago, Ill.

Acme Tool & Die Co., 314 E. Water St., Syracuse, N. Y.

Adell Mfg. Co., Orange, Mass.

Advance Mfg. & Tool Co., 1244 St. Clair Ave., S. E., Cleveland, O.

Advance Tool Works, 2300 Warren Ave., Chicago, Ill.

Albany Machine & Tool Co., 1031 Broadway, New York, N. Y.

Alent Machine Tool Co., Rochester, N. Y.

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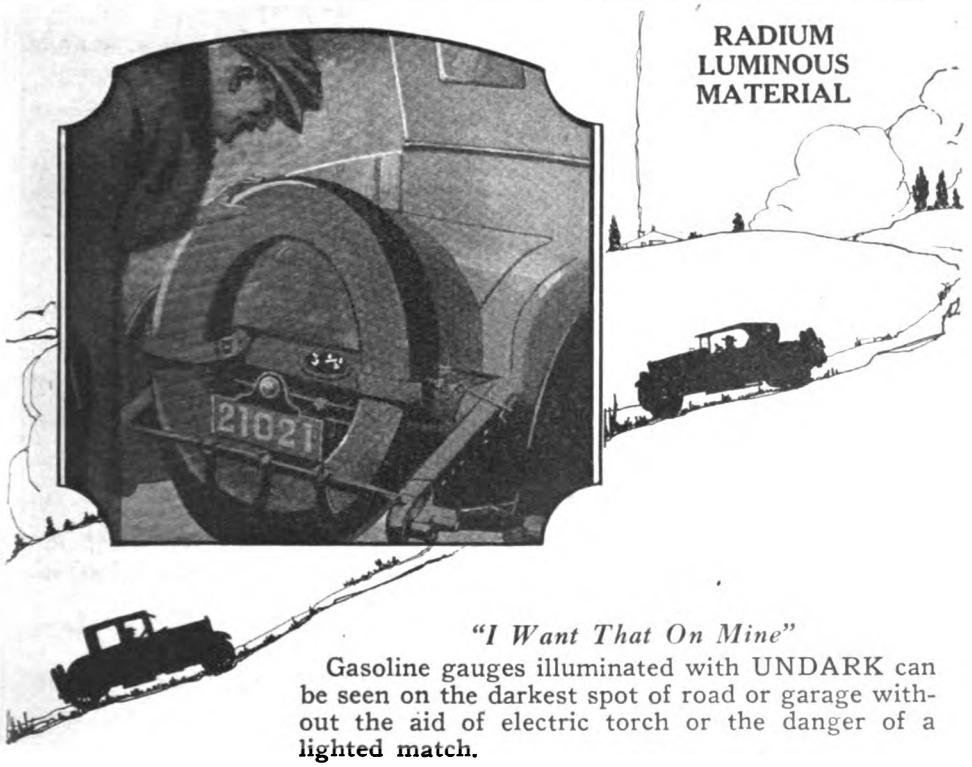

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DIES, JIGS, TOOLS and FIXTURES (Continued)

Alsteel Mfg. Co., 7-9 Carlyle St., Battle Creek, Mich. (See page 351.)

American Metal Products Co., 6431-61 Epworth Blvd., Detroit, Mich. (See page 625.)

American Tool, Die & Machine Co., 1114-20 E. Tenth St., Indianapolis, Ind.

American Tool & Mfg. Co., Urbana, O.

Andis Tool Co., 1218 Washington St., Racine, Wis.

Arlington Machine Works, 668-74 Jenks St., St. Paul, Minn.

Arrow Tool Co., 220 Cannon St., Bridgeport, Conn.

Atcheson Tool & Die Co., 609-11 N. Fourth St., Columbus, O.

Atlas Mfg. Co., 125 Water St., New Haven, Conn.

Ault Engineering Co., Frank, U. B. Bldg., Dayton, O.

Automatic Machine Co., 1150 W. Second St., Dayton, O.

B. & W. Tool & Die Co., 102 St. Clair Ave. N. W., Cleveland, O.

Baldwin Mfg. Co., Sparta, Mich.

Bay State Machine & Tool Co., 30 Cypress Co., Springfield, Mass.

Beaver Machine & Tool Co., 625-43 N. Third St., Newark, N. J.

Bender & Sons, P. J., 87 Frankfort St., New York, N. Y.

Berggren & Pearson Machine Co., 221-27 Canal Street, New York, N. Y.

Bersted Forming Tool Co., 765-71 Mather St., Chicago, Ill.

Blodgett Engineering & Tool Co., Roosevelt Pk., 14th & Dalzelle Sts., Detroit, Mich.

Blum & Co., Wm., 719 S. 18th St., Newark, N. J.

Bond Machine Co., 815-25 W. Fifth St., Wilmington, Del.

Boston Tool & Mfg. Co., 262 Dover St., Boston, Mass.

Bowen Machine Co., Geo. F., 109-11 Tichenor St., Newark, N. J.

Bowling Green Die & Tool Co., 535 E. Wooster St., Bowling Green, O.

Braden Mfg. Co., 135 W. Third St., New York, N. Y.

Brady Tool & Die Corp., 236 Mill St., Rochester, N. Y.

Bremer & Co., 139 N. Seventh St., Philadelphia, Pa.

Bridgeport Die & Machine Co., 170 Elm St., Bridgeport, Conn.

Bridgeport Engineering Co., Bridgeport, Conn.

Bridgeport Silverware Mfg. Corp., 65 Holland St., Bridgeport, Conn.

Bristol Industries, Inc., Woolworth Bldg., New York, N. Y. (See page 351.)

Broadway Tool & Machine Co., 717 Livingston St., Elizabeth, N. J.

Brock, Jr., Tool & Mfg. Works, Arthur, 533 N. 11th St., Philadelphia, Pa.

Brubaker & Bros., W. L., 50 Church St., New York, N. Y. (See page 349.)

Buerk Tool Works, 38 Pearl St., Buffalo, N. Y.

Budd-Ranney Engineering Co., 44 E. Chestnut St., Columbus, O.

Bultman Co., F. H., 10271 Berea Rd., Cleveland, O.

Burgess Machine Co., 45 Chestnut St., New Haven, Conn.

Capital Die, Tool & Machine Co., 619-21 N. Fourth St., Columbus, O.

Capital Tool & Die Works, 1100 Oakdale Ave., Chicago, Ill.

Carde Stamping & Tool Co., West Side, Saginaw, Mich.

Carpenter Mfg. Co., E. W., 515 Union Ave., Bridgeport, Conn.

Carroll Engineering Co., Dayton, O. (See page 351.)

Cartwright Die & Tool Co., 2962 Hart Ave., Detroit, Mich.

Central Machine Works, 19 Church St., Worcester, Mass. (See page 1021.)

Central Machine Works, 1911 N. 12th St., St. Louis, Mo.

Central Tool & Die Co., 501 E. Third St., Dayton, O.

Challenge Gauge & Tool Co., 16-22 W. South St., Indianapolis, Ind.

Chester Die Sinking & Machine Co., Chester, Pa.

Chicago Tool Co., 542 W. Jackson Blvd., Chicago, Ill.

City Engineering Co., Beaver Power Bldg., Dayton, O.

Cleveland National Machine Co., 1366 W. 70th St., Cleveland, O.

Cleveland Steel Tool Co., 650 E. 82nd St., Cleveland, O.

Coin Device & Signal Co., 409 Eighth Ave., New York, N. Y.

Collamer Machine Works, 1214 E. 152d St., Cleveland, O.

Colonial Stamping Co., Brill St. & Morris Canal, Newark, N. J.

Columbus Die, Tool & Machine Co., 955 Cleveland Ave., Columbus, O.

Connery Machine & Tool Co., 56 Harrison Ave., Springfield, Mass.

Cooney-Dunn Co., 72 Grand St., New York, N. Y.

Cotton, H. W., Woolworth Bldg., New York, N. Y.

Craddock, Edward S., 221 E. 144th St., New York, N. Y.

Craftsman Tool Co., Conneaut, O.

Criterion Tool & Engineering Co., 501 E. Third St., Dayton, O.

D. & D. Machine & Tool Co., 16-20 Jefferson Ave., Elizabeth, N. J.

Dan Tool Co., 3925 Montrose Ave., Chicago, Ill.

Day, Geo. P., 21 Haverhill St., Boston, Mass.

Dayton Irrigation Co., 261-63 High St., Dayton, O.

Dayton Tool Co., New Dickey Bldg., Dayton, O.

Delaware Engineering Co., C. & Buttonwood Sts., Wilmington, Del.

Detroit Stamping Co., 3445-59 W. Fort St., Detroit, Mich.

Diamant Tool & Mfg. Co., 91-97 Runyon St., Newark, N. J.

Dimler-Himes Tool Co., Third & Canal Sts., Dayton, O.

Dodge Tool Co., 721 Main St., Grinnell, Iowa.

Dorchester Machine & Tool Works, 70 Freeport St., Boston, Mass.

Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.

Dover, George W., Eddy St. & Thurbers Ave., Providence, R. I.

Du Bois Machine Shop, 118-28 Hudson Ave., Albany, N. Y.

Dunner Machine Co., 220 Centre St., New York, N. Y.

Duplex Machine Co., 93 Lafayette St., Newark, N. J.

E. H. Machine Co., 234 Maple St., Weehawken, N. J.

Eagle Engineering Co., Springfield, O.

Eagle Tool Co., 1103 S. Liberty St., Muncie, Ind.

Elite Machine & Tool Works, 220 W. 19th St., New York, N. Y.

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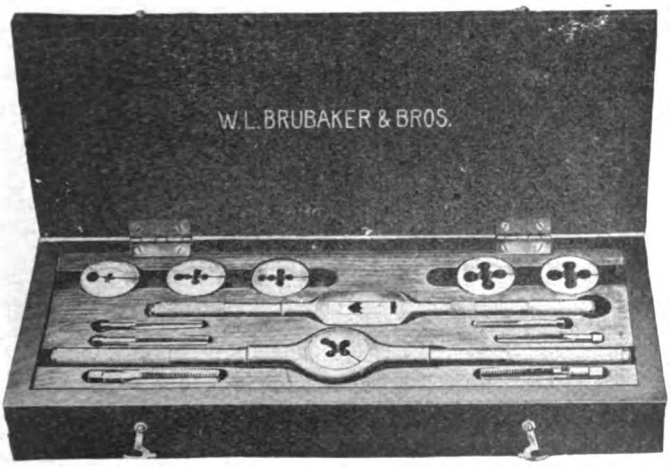

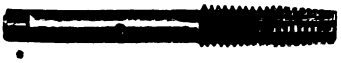

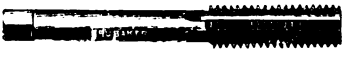

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Eisener Mfg. Co., C. C., 15423 Center St., Harvey, Ill.

Ellicott Machine Co., 160 Ellicott St., Buffalo, N. Y.

Eureka Tool & Machine Co., 306 Market St., Newark, N. J.

Eveready Mfg. Co., 80 Boylston St., Boston, Mass.

Excelsior Tool & Mfg. Co., 96-98 Fulton St., New York, N. Y.

Fairbanks-Schock Co., 3353 University St., Minneapolis, Minn.

Fallon Machinery Co., 31 Marshall's Wharf, Lynn, Mass.

Farrell & Stoneham Engineering Co., Mutual Home Bldg., Dayton, O.

Federal Tool & Machine Co., 24 Scott St., Newark, N. J.

Feeney Tool Co., 751 Central Ave., Bridgeport, Conn.

Franklin Die Tool Co., Columbus, O.

Franklin Machine & Tool Co., Springfield, Mass. (See page 1205.)

Frostholm Bros., 1809 Park St., Syracuse, N. Y.

Fulton Machine Tool Co., 1422 Fulton St., Chicago, Ill.

G-H-P Mfg. Co., 129 N. Main St., Providence, R. I.

G-K Machine & Tool Co., 244-46 Greenwich St., New York, N. Y.

Gaeke Engineering Co., Dayton, O.

Gem City Machine Co., 436 E. First St., Dayton, O.

Gem Snap Fastener Co., 2349 Summerfield St., Brooklyn, N. Y.

General Machine & Mfg. Co., 640 Iranston Ave., Bridgeport, Conn.

General Mfg. Co., 255 Meldrum Ave., Detroit, Mich.

General Ordnance Co., 2 W. 43d St., New York, N. Y.

General Stamping & Mfg. Works, 1652 W. Belmont Ave., Chicago, Ill.

Genesee Precision Tool & Die Co., 105 N. Water St., Rochester, N. Y.

Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.

Globe Machine & Stamping Co., 1200-50 W. 76th St., Cleveland, O. (See page 1049.)

Gnome Machine & Tool Co., Elizabeth, N. J.

Goode Machine Co., 315 Union Park Ct., Chicago, Ill.

Grand Tool & Machine Works, 161 Grand St., New York, N. Y.

Grant Mfg. & Machine Co., 18 Sillman Ave., Bridgeport, Conn.

Great Lakes Pressed Steel Corp., 1410 Niagara St., Buffalo, N. Y.

Gumphert & Sons Co., George A., 240-42 Cherry St., Philadelphia, Pa.

H. L. & W. Sales & Mfg. Co., 2755 W. Fourth St., Detroit, Mich.

Hammarlund Mfg. Co., 144-46 W. 18th St., New York, N. Y.

Hampden Tool Co., 238 Dwight St., Springfield, Mass.

Hanney Stamping Works, 3102 Woodbridge St., Detroit, Mich.

Hart Machine & Tool Co., 364 Atlantic Ave., Boston, Mass.

Harvey Mfg. Co., 1862 State St., Bridgeport, Conn.

Hearn Machine Works, J. C., Columbus, O.

Hedges Co., B. E., Genesee & Division Sts., Auburn, N. Y.

Hergi Mfg. Co., Bridgeport, Conn.

Hinman, A. T., 628 Race St., Philadelphia, Pa.

Holmes Special Tool Co., 38 Canal St., New Haven, Conn.

Holm's Mfg. Co., Fairfield & Racine Aves., Kenosha, Wis.

Holmes Special Tool Co., 38 Canal St., New Haven, Conn.

Horak Tool & Die Works, 1027 N. Hamlin Ave., Chicago, Ill.

Horat & Co., Lafayette, Ind. (See page 857.)

Hub Engineering & Machine Co., Bound Brook, N. J.

Ideal Tool & Machine Co., 48 S. Water St., Poughkeepsie, N. Y.

Iles Mfg. Co., E. W., Shelton, Conn.

Industrial Tool, Die & Engineering Co., 322 E. Fifth St., Dayton, O.

International Tool & Gauge Co., 706 Howard Ave., Bridgeport, Conn.

Iroquois Tool & Stamping Co., 909-16 Genesee St., Buffalo, N. Y.

J. C. H. Automatic Machine Works, 2434 N. Fairhill St., Philadelphia, Pa.

Jensen & Co., O. C., 1922 Park Ave., New York, N. Y.

Jewelers Toolmaking Co., 220 Eddy St., Providence, R. I.

Johnson Mfg. Co., 103 N. Front St., Philadelphia, Pa.

Johnson Tool Co., 197-99 Eddy St., Providence, R. I. (See page 1179.)

Joliet Die & Tool Co., Joliet, Ill.

Jonas, Mark W., 53rd St. & Lansdowne Ave., Philadelphia, Pa.

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for A. H. Petersen Mfg. Co., Milwaukee, Wis. (See page 687.)

Jurack Pattern Works, Chas., 600 S. Pierce St., Milwaukee, Wis.

Kamco Corp., 34 Barclay St., New York, N. Y.

Kanters Stamping & Mfg. Co., Shaw Ave. & 133rd St., Cleveland, O.

Keavaney & Son, W. R., 185 Bunker Hill Rd., Waterbury, Conn.

Kell, Hock & Co., 354 Mulberry St., Newark, N. J.

Keller Mechanical Engraving Co., 72 Washington St., Brooklyn, N. Y. (See page 611.)

Keller Pneumatic Tool Co., Grand Haven, Mich. (See page 441.)

Keystone Production & Mfg. Co., 1835 W. 22nd St., Chicago, Ill.

Kickhaefer Mfg. Co., Dept. A., 189-201 Oregon St., Milwaukee, Wis. (See page 901.)

Kihm-Bowen Machine Co., 146 Coit St., Irvington, N. J.

King Works, 7350 St. Aubin Ave., Detroit, Mich.

Knapp Engineering Corp., Arthur, 19 W. 44th St., New York, N. Y. (See page 881.)

Knowles Tool Mfg. Co., 125 N. Webster St., Dayton, O.

Koehler Mfg. Co., Marlboro, Mass.

Krebs Mfg. Co., 341 E. Ohio St., Chicago, Ill.

L. & L. Mfg. Co., 134 High St., Newark, N. J.

L. T. L. Tool Co., 1320 Woodruff Ave., Rockford, Ill.

La Crosse Hinge & Lock Co., 907 S. Front St., La Crosse, Wis.

La Crosse Pattern Works, La Crosse, Wis.

Lansing Stamping & Tool Co., Lansing, Mich. (See page 353.)

Larned Tool & Die Co., 1326 E. Woodbridge St., Detroit, Mich.

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Liberty Die, Tool & Machine Co., Columbus, O.

Liberty Electric Co., 97 Haverhill St., Boston, Mass.

Liberty Tool Co., 577 S. Tenth St., Newark, N. J.

Liberty Tool & Gauge Works, 338 Bernon St., Woonsocket, R. I.

Lidseen, 832-40 S. Central Ave., Chicago, Ill. (See page 189.)

Lincoln Machine Co., 1068 Main St., Pawtucket, R. I.

Linden & Co., Providence, R. I. (See page 839.)

Lindstrom Die, Tool & Gauge Works, L., 50 Silliman St., Bridgeport, Conn.

Link Tool & Machine Co., 176-82 Worth St., New York, N. Y.

Loeffler & Co., H., 297 Washington St., Newark, N. J.

Lombardi Motor Car Co., 67-71 Minerva St., Derby, Conn

Lucas-Miner Tool & Production Co., 427 Valley St., Dayton, O.

Luers Bros. Machinery & Tool Co., Maple & Rivard Sts., Detroit, Mich.

Lynn Machine & Screw Co., 496 Washington St., Lynn, Mass.

McCall Machine Works, 574 Lyell Ave., Rochester, N. Y.

McCuen & Graves, 4100 Ravenswood Ave., Chicago, Ill.

McCulloch Mfg. Co., 216 High St., Boston, Mass. (See page 981.)

McGuire Tool & Die Works, J. J., 816 Livingston St., Elizabeth, N. J.

McIntyre Machine Works, 78 Grove St., Hartford, Conn.

Mantle & Co., 1907 Park Ave., New York, N. Y.

Manufacturers Tool & Die Co., 23 S. Water St., Rochester, N. Y.

Marvin Mfg. Co., W. B., Urbana, O.

Matthews Engineering Co., 460 Monroe St., Sandusky, O. (See page 389.)

Maute Sons Die & Tool Works, J., 21-23 Kane St., Buffalo, N. Y.

Mehl Machine Tool & Die Co., E. First Ave., Roselle, N. J.

Metal Parts Mfg. Co., 1034 E. 152d St., Cleveland, O.

Metal Products Mfg. Co., 241-43 W. 23d St., New York, N. Y.

Meyers Co., W. F., Bedford, Ind.

Miami Tool & Die Co., St. Paul St. & E. Huffman Ave., Dayton, O.

Michigan Forge & Tool Co., 7360 Richmond Ave., Detroit, Mich.

Michigan Pattern & Machine Works, 3429-39 E. Jefferson Ave., Detroit, Mich.

Middletown Fire Arms Specialty Co., 32 Warwick St., Middletown, Conn.

Miller, Julius W., 22 Raymond St., So. Norwalk, Conn.

Miller Tool & Mfg. Co., 1725 16th St., Detroit, Mich. (See page 1167.)

Milwaukee Metal Working Co., 382-88 Clinton St., Milwaukee, Wis.

Modern Tool & Machine Works, 344-50 Mulberry St., Newark, N. J.

Modern Tool, Die Machine Co., 214-20 N. Fourth St., Columbus, O. (See page 1145.)

Modern Tool & Mfg. Co., 119 Opera Pl., Cincinnati, O.

Moline Pressed Steel Co., Fifth St., East Moline, Ill.

Monarch Tool & Machinery Co., 522 S. Clinton St., Chicago, Ill.

Monarch Tool & Mfg. Co., 118-22 Opera Pl., Cincinnati, O.

Montgomery Tool & Mfg. Co., First & Madison Sts., Dayton, O.

Moody Tool Works, Chas. J., 60 River St., Elgin, Ill.

Moore & Co., 301 W. Grand Ave., Chicago, Ill.

Moore-Eastwood Mfg. Co., Dayton, O.

Moore Tool & Machine Co., Newark, O.

Moran Machine Co., John F., 103-07 Grape St., Syracuse, N. Y.

Multiple Spark Plug Mfg. Co., 138 Holden St., Minneapolis, Minn.

Murchey Machine & Tool Co., 951 Porter St., Detroit, Mich.

Murphy Die & Machine Co., A. F., 364-68 Atlantic Ave., Boston, Mass.

National Automatic Tool Co., S. Seventh & N. Sts., Richmond, Ind.

National Indicator Co., 852 Vernon Ave., Long Island City, N. Y.

National Metal Stamping & Mfg. Co., Mulberry & Murray Sts., Newark, N. J.

National Production Co., Benson & Bellevue Sts., Detroit, Mich.

National Steel Products Co., 1610 Crystal Ave., Kansas City, Mo. (See page 501.)

Neff & Morse, 904 Washington St., Boston, Mass.

Nelson Tool Co., 782 E. 142d St., New York, N. Y.

Nestor Mfg. Co., 40 W. 13th St., New York, N. Y.

New Process Specialty Co., 230-32 Hanover St., Milwaukee, Wis.

Newark Tool & Die Co., 20-22 Lawrence St., Newark, N. J.

Nilson Machine Co., A. H., 1525 Railroad Ave., Bridgeport, Conn.

North Dayton Machine & Tool Co., 126 Valley St., Dayton, O.

North Star Specialty Co., 1834 University Ave., St. Paul, Minn.

Parker Machine Co., 221 High St., Boston, Mass.

Parsons Mfg. Co., 5301-47 Bellevue Ave., Detroit, Mich.

Pearce Co., Fred'k., 18-20 Rose St., New York, N. Y.

Peterson Mfg. Co.—See Jonas, C. N. & F. W.

Phenix Truck Makers, 4948 Bloomingdale Rd., Chicago, Ill.

Pittsburgh Reinforced Brazing & Machine Co., 2525 Liberty Ave., Pittsburgh, Pa.

Plum & Little, 30 N. Water St., Rochester, N. Y.

Potter Tool & Machine Works, S. A., 69 E. 130th St., New York, N. Y.

Power Vosburg Co., 445 W. Larned St., Detroit, Mich.

P-R-E-C-I-S-E Mfg. Corp., Rochester, N. Y.

Precision Gauge & Tool Co., 166 Elm St., Bridgeport, Conn.

Premier Machine Tool Works, 1031 Broadway, Albany, N. Y.

Producers Machine & Specialty Corp., 61-65 Elizabeth St., Rochester, N. Y.

Production Engineering Co., 212 Centre St., New York, N. Y.

Progressive Tool Mfg. Co., Fifth St., Beloit, Wis.

Proviso Tool & Machine Co., 6 N. Eighth Ave., Maywood, Ill.

Queen City Tool Co., 778 Kensington Ave., Buffalo, N. Y.

Queensboro Tool & Die Co., 136 West Ave., Long Island City, N. Y.

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Raymond Engineering Corp., 307 Lafayette St., New York, N. Y.

Redkin, Ekstrom & Co., Rockford, Ill.

Reliable Tool Co., 33-35 Ellis Ave., Irvington, N. J.

Reliance Die & Stamping Co., 515 N. La Salle St., Chicago, Ill.

Rex Machine & Tool Co., 24 Scott St., Newark, N. J.

Reynolds Engineering Co., First St. & Third Ave., Moline, Ill.

Richard Bros. Die Works, 1560-74 Milwaukee St., E., Detroit, Mich.

Riverside Machine Co., Front & Penn Sts., Chester, Pa.

Robbins, Gamwell & Co., Pittsfield, Mass.

Rochester Auto & Tool Co., 17 Andrews St., Rochester, N. Y.

Rockford Drilling Machine Co., Foot Catherine St., Rockford, Ill.

Rockford Metal Specialty Co., 720 S. Main St., Rockford, Ill.

Root Co., B. M., 30-36 Jefferson Ave., York, Pa.

Ross Machine Co. (Wollaston), Quincy, Mass. (See page 617.)

S-P Mfg. Co., 872 E. 72d St., Cleveland, O.

S. & H. Machine & Tool Co., 23 Elizabeth St., Albany, N. Y.

Saginaw Stamping & Tool Co., ft. Williamson St., Saginaw, Mich.

Saunders Co., James, 24-26 N. Canal St., Dayton, O.

Schroeder Bros. Mfg. Co., 102 Brook St., Torrington, Conn.

Seavey Machine Works, Eugene, 359 Pearl St., New York, N. Y.

Security Tool Works, 115-17 S. Clinton St., Chicago, Ill.

Shipman Machine Co., 218 Summer St., Boston, Mass.

Simplex Tool Co., Social St., Woonsocket, R. I.

Sloan & Chace Mfg. Co., 351 Sixth Ave., Newark, N. J.

Smith Mfg. Co., W. F., 157 Stratford Ave., Bridgeport, Conn.

Sommer-Adams Co., 2934 E. 55th St., Cleveland, O.

Specialty Gauge & Tool Co., 30-32 E. Georgia St., Indianapolis, Ind.

Standard Electric Mfg. Co., 126 South St., Newark, N. J.

Star Tool & Mfg. Co,. 4520 Lexington St., Chicago, Ill.

Steber Machine Co., 713 First St., Utica, N. Y.

Stauffer & Son, P. S., 63 Governor St., Springfield, Mass.

Steiner Bros., Haller St., Lima, O.

Stemco Engineering Co., Second & Webb Sts., Dayton, O.

Sterling Cork & Seal Co., 1612 Oakwood Ave., Toledo, O.

Sterling Tool & Mfg. Co., 495 Broadway, Milwaukee, Wis.

Sterling Tool & Machine Co., 205-09 W. 19th St., New York, N. Y.

Sterns Aero Parts Co., 203 St. Claire Ave., N. E., Cleveland, O.

Stewart-Skinner Co., 17 Green St., Worcester, Mass.

Sundstrom Mfg. Co., Shields Ave. at 32d St., Chicago, Ill. (See page 751.)

Superb Mfg. Co., Monticello, Ind.

Superior Mfg. Co., 1109 Race St., Philadelphia, Pa.

Superior Tool & Die Works, 313 S. Clinton St., Chicago, Ill.

Superior Tool & Engineering Co., 611 N. Capital Ave., Indianapolis, Ind.

Superior Tool & Mfg. Co., 3 Reeves St., Worcester, Mass.

Swissgabel Mfg. Co., C. F., Dayton, O.

T. & D. Mfg. Co., 307 Canal St., New York, N. Y.

Taft-Peirce Mfg. Co., Woonsocket, R. I. (See page 849.)

Taylor-Shantz Co., 478 St. Paul St., Rochester, N. Y.

Thor Machine Works, 15th & Clark Sts., Racine, Wis.

Thorn Machine Tool Works, 107 N. Franklin St., Syracuse, N. Y.

Thurston Mfg. Co., 140 Benedict St., Providence, R. I.

Tisch Machine Tool & Die Works, 452-54 Spring St.. Elizabeth, N. J.

Tool & Auto Products Co., St. Clair & E. 49th St., Cleveland, O.

Triangle Tool Co. of Erie, 162 E. Eighth St., Erie, Pa.

Turner Novelty Co., John C., Dayton, O.

Twin City Die & Tool Works, 4522 Sixth Ave., Rock Island, Ill.

Ulmer Co., J. C., 1791 E. 38th St., Cleveland, O.

Ultimate Machine Works, 209 Centre St., New York, N. Y.

Union Gear & Machine Co., 27 Purchase St., Boston, Mass.

United Machine Works, 55-57 W. Third St., New York, N. Y.

Universal Machine Co., 501-09 E. Preston St., Baltimore, Md.

Universal Machine & Tool Co., Canton, O.

Valley Engineering Co., 427 Valley St., Dayton, O.

Varick Machine & Tool Works, 143 Varick St., New York, N. Y.

Viking Tool & Machine Co., 243-49 44th St., Brooklyn, N. Y.

Vulcan Tool Co., 418 E. First St., Dayton, O.

W. B. W. Tool Co., Main & Bruen Sts., Dayton, O.

Wade-American Tool Co., 49-59 River St., Waltham, Mass.

Wayne Tool Co., 642 Catherine St., Detroit, Mich.

Weber & Scher Mfg. Co., 24 Scott St., Newark, N. J.

West Michigan Machine Tool Co., 231 Ionia Ave., Grand Rapids, Mich.

West & Dodge Co. (Faniuel Sta.), Boston, Mass.

Western Tool & Machine Works, 127 N. Wells St., Chicago, Ill.

Whatley Co., A. H., 209 Cranston St., Providence, R. I.

White-Quehl Mfg. Co., 427 E. Pearl St., Cincinnati, O.

Whiting & Comstock, Hartford, Conn. (See page 1157.)

Wilco Co., 172 Griswold St., Detroit, Mich. (Distributors.) (See page 221.)

Wilton Machine Tool Co., 34 Linden Park St., Boston, Mass.

Wing & Co., J. T., 129 Woodward Ave., Detroit, Mich.

Woody Machine Works, 738-800 W. Washington St., Indianapolis, Ind.

Wright-Fisher Engineering Corp., 3087 E. Grand Blvd., Detroit, Mich.

York Electric & Machine Co., 30-34 N. Penn St., York, Pa.

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Send for samples showing the ZAPON brands – Muleskin, Broncho and Mustang – that are made especially for fine auto – mobile upholstery and California Top work

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200 Fifth Ave., New York
Branches: Chicago, Detroit, Los Angeles, St. Louis

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DIES, JIGS, TOOLS and FIXTURES (Continued)

Young & Franklin, Industrial Bldg., Syracuse, N. Y.

Zarem & Rose, 174 Centre St., New York, N. Y.

Zenite Metal Co., 201-05 N. West St., Indianapolis, Ind. (See page 637.)

Zuhr, Henry, 200 William St., New York, N. Y.

Zumeta Machine Co., 310 W. 39th St., New York, N. Y.

DIES, SCREW CUTTING—See Taps and Dies

DIES, STAMPING—See Dies, Jigs, Tools and Fixtures

DIFFERENTIAL ASSEMBLY PLATES FOR FORDS — See Plates, Differential Assembly

DIFFERENTIAL GEARS—See Gears, Differential

DIFFERENTIALS, COMPLETE—See Gears, Differential

DIMMERS, Glare

(Colored Glass or Celluloid Attachment for Wind shield to dim the glare from approaching headlights)

Auto Light Glare Shield Co., 1144 Broadway, Denver, Colo. "Barhart."

Barhart—See Auto Light Glare Shield Co.

Brett Dimmer Co., A. H., Mason City, Ia.

Glaroscope—See Randall-Faichney Co.

Nasco—See National Souvenir Co.

National Souvenir Co., 218-19 N. Cedar St., Owatoma, Minn. "Simplex," "Nasco."

Portland Sales Co., 566 Commercial St., Boston, Mass.

Randall-Faichney Co., 76 Atherton St. (Jamaica Plain), Boston, Mass. "Glaroscope.

Safe-Tee-Scope Co., 75 S. Laurel St., Bridgeton, N. J.

Sales Publicity Co., Carlton Ct. Bldg., Buffalo, N. Y.

Simplex—See National Souvenir Co.

Smith "Glar-Stop" Specialty Co., 19th & Arch Sts., Philadelphia, Pa.

DIMMERS or SHADES, Headlight

(Diffusing and deflecting lenses or glasses, special shades and reflectors, hoods and screens, two filament bulbs, etc.)

Aderente—See Jay & Dee Specialty Co.

Alvo Mfg. Co., Ashland, O.

Amco—See Art Metal Mfg. Co.

American Simplex Co., 2101 W. 16th St., Anderson, Ind.

Ames—See Heinze Electric Co.

Amesbury Bent Glass Co., Amesbury, Mass.

Art Metal Mfg. Co., E. 61st St. & Curtis Ave., Cleveland, O. "Amco."

Atlas Trading & Navigation Co., Monadnock Bldg., San Francisco, Cal. (Sole Distributors for Torrance Glass Co., Los Angeles Cal.)

Auto Glare Remover Co., 161 Massachusetts Ave., Boston, Mass. (See page 1195.)

Benzer Corp., Myrtle, Cooper & Webster Aves., Brooklyn, N. Y. (See page 359.)

Bradsto Appliances, 65 Main St., Buffalo, N. Y. "Full-Ray."

Brett Dimmer Co., A. H., Mason City, Ia.

Brown Reflector, 560 E. Fourth St., Boston, Mass. "Roadwide."

Butterfly—See Sparta Mfg. Co.

Cassidy Co., Inc., Edward A., 23 W. 43d St., New York, N. Y. (Sales Department for Corning Glass Works, Corning, N. Y.) "Conaphore." (See page 87.)

Chicago Eye Shield Co., 2300 Warren Ave., Chicago, Ill. "Mel-O-Lite."

Clamert Mfg. Co., Third & Ross Sts., Pittsburgh, Pa.

Conaphore—See Cassidy Co.

Corning Glass Works—See Cassidy Co.

D'Eyraud, Louis, 452 W. 16th St., Los Angeles, Cal. (Distributor for west of Colorado State Eastern Line for "Osgood" Dimmers.) (See page 247.)

Dannenhirsch Co., 1905 W. Dauphin St., Philadelphia, Pa. "Danno."

Danno—See Dannenhirsch Co.

Detroit Right Lens Co., Book Bldg., Detroit, Mich. "Right."

Diamond Jay Dee Co., 1400 Michigan Ave., Chicago, Ill. (See page 569.)

Dillon Lens & Mfg. Co.—See Pyrene Mfg. Co.

Dim Auto Lite Switch Co., Monroe, Mich.

Divergo—See Rotary Products Co.

Doe Battery & Novelty Co., S. Water St., Kent, O.

Dubuque Glass Co., Jones & Levee Sts., Dubuque, Ia.

Dunn Mfg. Co., A. C., 1118-26 Third Ave., S., Minneapolis, Minn. "E-Z-2-C."

Dwelle-Kaiser Co., 237-51 Elm St., Buffalo, N. Y.

E-Z-2-C—See Dunn Mfg. Co.

Eclipse—See Vesta Battery Corp.

Eclipse Dimmer Co., 122 Sheridan Sq., East End, Pittsburgh, Pa.

Faw, J. H., 27 Warren St., New York, N. Y. "Lennon." (See page 241.)

Filmolens Sales Co., 1926 Ford Bldg., Detroit, Mich. (See page 359.)

Flemington Cut Glass Co., Main St., Flemington, N. J.

Fracto Specialty Co., 161 Massachusetts Ave., Boston, Mass. "Fractors."

Fractors—See Fracto Specialty Co.

Full-Ray—See Bradsto Appliances.

Glar Kilr—See Zorger Lens Co.

Glar-Mask—See Zorger Lens Co.

Glare-Off Co., 90 West St., New York, N. Y.

Glareless Auto Lens Co., 4531 Ravenswood Ave., Chicago, Ill.

Glaroscope—See Randall-Faichney Co.

Glowlite Co., 33 N. High St., Columbus, O.

Heinze Electric Co., Lawrence St., Lowell, Mass. "Ames."

Hillman Mfg. Co., 2317 E. 16th St., Los Angeles, Cal. (See page 1107.)

Holophane Glass Co., 340 Madison Ave., New York, N. Y.

Howard Auto Headlight Deflector Co., Detroit, Mich.

Iowa Optical Co., New London, Ia.

Jay & Dee Specialty Co., 41 Park Row, New York, N. Y. "Aderente."

Johanson, Emil G., 1123 Wells St., Chicago, Ill.

Kamp Auto Supply Co., 707 Second Ave., S., Minneapolis, Minn. "Thula."

Kelly, Chas. F. W., 1664 Broadway, New York, N. Y. (Sole Distributor for Raydex Mfg. Co., Brackenridge, Pa.)

King—See Flemington Cut Glass Co.

Kopp's—See Pittsburgh Lamp, Brass & Glass Co.

L. L. L. D. Mfg. Co., 203 State St., Rochester, N. Y.

Lancaster Lens Co., 220-26 W. Main St., Lancaster, O. "Star."

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MACBETH LENS

AN AUTOMOBILE HEADLIGHT LENS WHICH IS BUILT ON THE SAME FUNDAMENTAL PRINCIPLES OF LIGHT CONTROL AS THE MARVELOUS MACBETH LIGHT-HOUSE LENSES.

THE green visor and the scientifically accurate prisms on the front together with the concave recesses on the back eliminate all glare and give long range and side lighting necessary for safe driving. The Macbeth Lens is distinctive—this because of the green visor.

It took four years to develop the Macbeth Lens and it takes 72 hours to manufacture one lens. It has solved the headlight problem.

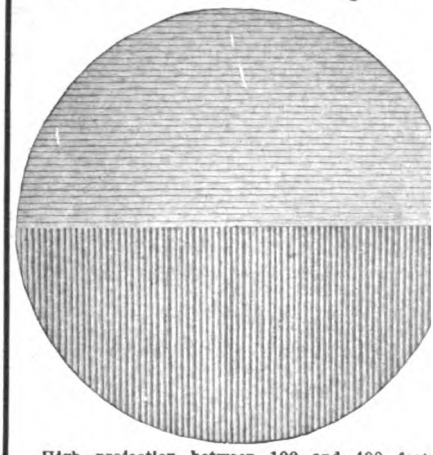
Macbeth Lenses are made in all sizes to fit standard lamps.

PRICE LIST

All sizes	$5.25 per pair
Denver and West	5.75 per pair
Canada	6.00 per pair
Winnipeg and West	6.50 per pair

Macbeth-Evans Glass Company
Pittsburgh

Saferlite Deflecting Le



High projection between 100 and 400 feet ahead, with sufficient spread to cover the traffic width of road.

PRICES

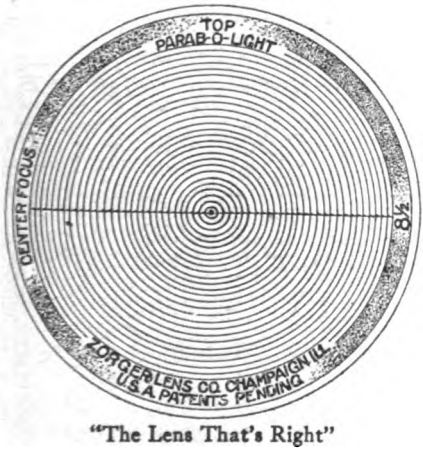
Up to 9"—$1.00 per Pair
Over 9"—$1.25 per Pair

Prices in and West of the Rockies 50 cents per pair higher.

Write for circular and our nearest distributing point.

SAFERLITE LENS COMPANY
220 Fifth Avenue, Room 1714, New York Ci

PARAB-O-LIGHT



"The Lens That's Right"

All the light without the glare. Legal Everywhere. Prices: $3.00 to $4.00 per pair. Denver and West $3.25 to $4.25 Write for name of nearest distributor.

The Zorger Lens Co.
Champaign Illinois

RAYDEX

SHAFT LIGHTS and LENS

STOCKED BY THE BEST JOBBERS EVERYWHERE

RAYDEX MANUFACTURING COMPANY
BRACKENRIDGE
PENNSYLVANIA

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DIMMERS or SHADES, Headlight (Continued)

Lee Knight Lens Co., 210 East Ave., Rochester, N. Y.

Legalite Corporation, 120 Boylston St., Boston, Mass.

Lennon—See Faw, J. H.

Lenslite—See Manufacturers Glass Co.

Letts—See Manifold Heater Co.

Liberty—See Macbeth-Evans Glass Co.

Long Bros., Broadway & Buckeye St., Kokomo, Ind. "Long Way."

Long Way—See Long Bros.

McKee Glass Co., Jeannette, Pa.

Macbeth-Evans Glass Co., Pittsburgh, Pa. (See page 357.)

Manifold Heater Co., 30 Main St., Cortland, N. Y. "Letts."

Manufacturers Glass Co., 33 S. Dearborn St., Chicago, Ill. "Lenslite."

Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.

Mel-O-Light—See Chicago Eye Shield Co.

Merrill Co., Wm. C., Security Bldg., Milwaukee, Wis. (Sole Distributors for Rex Mfg. Co., Fond du Lac, Wis.) (See page 1157.)

Mock & Hardy, 111 W. Monroe St., Chicago, Ill. (Sole Distributors for Raylo Dimmer Co., Indianapolis, Ind.)

Monarch Carriage Goods Co., Cincinnati, O. (See page 407.)

Monroe Auto Specialty Co., 203 State St., Rochester, N. Y.

Multifrax Lens Co., 41 Union Sq., New York, N. Y.

National—See Smith Glass Co.

Nevablind Autolight Co., 47-51 Lispenard St., New York, N. Y.

Noglare Auto Lens Co., 148 Fifth St., Portland, Ore.

No-Glare—See Perrin Mfg. Co.

No-Glar-On Co., Stone St., Watertown, N. Y.

North Star—See S. & M. Mfg. Co.

Northwestern Mirror & Specialty Co., 1225-29 S. Crawford Ave., Chicago, Ill.

Onlee—See Wickwire Spencer Steel Corp.

Osgood Lens & Supply Co., Harris Trust Bldg., Chicago, Ill.

Parab-o-light—See Zorger Lens Co.

Parrish & Co., S. H., 202 S. Clark St., Chicago, Ill.

Patton Glare Stop Corp., 741-47 Santa Fe Ave., Denver, Colo.

Perrin Mfg. Co., 965 Woodward Ave., Detroit, Mich. "No-Glare."

Pittsburgh Lamp, Brass & Glass Co., Pittsburgh, Pa. "Kopp's." (See page 361.)

Punch—See Trieber Co.

Pyrene Mfg. Co., 17 E. 49th St., New York, N. Y. (Sole Distributors for Dillon Lens & Mfg. Co., Bridgeport, Conn.)

Rand Reflector Co., 191 Merrimack St., Haverhill, Mass.

Randall-Faichney Co., 76 Atherton St. (Jamaica Plain), Boston, Mass. "Glaroscope."

Raydex Mfg. Co., Brackenridge, Pa. (See page 357.)

Raylo Dimmer Co.—See Mock & Hardy.

Rex Mfg. Co.—See Merrill Co.

Reynolds & Co., Harry H., 641 E. 39th St., Chicago, Ill. "Sof-Lite."

Right—See Detroit Right Lens Co.

Roadlighter—See Shaler Co.

Roadwide—See Brown Reflector.

Roberts & Monroe, 35 Warren St., New York, N. Y. "Romon Nevablind." (See page 359.)

Romon Nevablind—See Roberts & Monroe.

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco."

S. & M. Mfg. Co., 2332 S. Michigan Ave., Chicago, Ill. "North Star." (See page 1109.)

Saferlite Lens Co., 220 Fifth Ave., New York, N. Y. (See page 357.)

Safetee-Glass Co., 326 N. Broad St., Philadelphia, Pa.

Scatter Light Lens Co., 209 Washington St., Newark, N. J.

Shaler Co., C. A., 900 Fourth St., Waupun, Wis. "Roadlighter." (See pages 359, 1049, and 1051.)

Simon & Co., S. C., 825 N. Second St., Philadelphia, Pa.

Smith Glass Co., L. E., Mount Pleasant, Pa. "National," "Violet Ray."

Sof-Lite—See Reynolds & Co.

Sparta Mfg. Co., Grand Rapids, Mich. "Butterfly."

Standard Corp., Outlook Bldg., Columbus, O. "Sun-Ray."

Star—See Lancaster Lens Co.

Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 177.)

Stopglare, Ltd., 270 Court St., Buffalo, N. Y.

Stryker Deflector Co., 70 W. Chippewa St., Buffalo, N. Y.

Suess Glass Co., Eighth & Virginia Sts., Seattle, Wash.

Sun-Ray—See Standard Corp.

Sunlite Co., McKinney, Texas.

Thuls—See Kamp Auto Supply Co.

Tobey, Wm. L., 9 Lewis St. (E. Boston), Boston, Mass.

Torrance Glass Co.—See Atlas Trading & Navigation Co.

Trieber Co., Benj., 4627 Broadway, Chicago, Ill. "Punch."

Unique Auto Specialties Co., 280 Golden Gate Ave., San Francisco, Cal.

United States Glass Co., Pittsburgh, Pa.

Violet Ray—See Smith Glass Co.

Warner-Patterson Co., 912 S. Michigan Ave., Chicago, Ill.

Wickwire-Spencer Steel Corp., Worcester, Mass. "Onlee." (See pages 829 and 909.)

Wilson, R. F., Foster Bldg., Denver, Colo.

Wing Co., St. Cloud, Minn.

Zorger Lens Co., Champaign, Ill. "Glar Kilr," "Glar-Mask," "Parab-o-Light." (See page 357.)

DIMMERS or SHADES, Headlight for Fords

(Diffusing and deflecting lenses or glasses, special shades and reflectors, hoods and screens, two filament bulbs, etc.—See also Regulators, Headlight)

A-K—See Angsten-Kox Co.

Amesbury Bent Glass Co., Amesbury, Mass.

Angsten-Kox Co., 221-23 W. Randolph St., Chicago, Ill. "A-K."

Boko—See Defiance Welding Co.

Defiance Welding Co., Defiance Bldg., Defiance, O. "Boko."

Dim-Ur-Lite—See Toledo Cable Co.

Doe Battery & Novelty Co., S. Water St., Kent, O.

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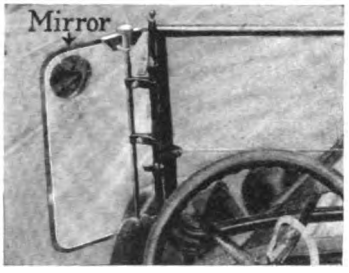
BENZER REAR VIEW WINDEFLECTORS



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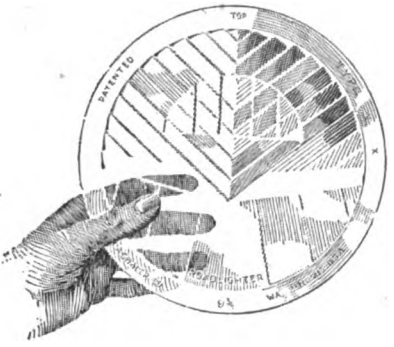
Get the Exclusive Sales Agency for Benzer Rear View Windeflectors—the only wind deflectors on the market with rear view mirrors ground into the glass. Large stock not needed to secure exclusive agency. Benzer "Windeflectors" sell on sight and net big profits.

Send now for a set on approval

THE BENZER CORPORATION

Myrtle, Cooper and Webster Aves. Brooklyn, New York



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FIRST!

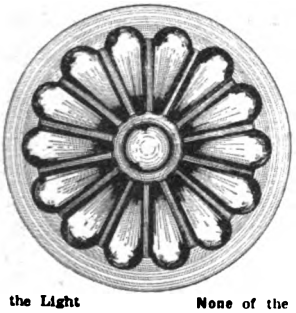
Not only legal everywhere, but the only lens **passed highest** in every official state test.

Unlike other lenses, it protects the user against the glaring lights he meets, and improves the driving light 100%. Much easier to sell than dimming lenses.

Write for special demonstration offer to dealers.

C. A. Shaler Co., 900 4th St., Waupun, Wis.

Makers of the World-Famous SHALER Vulcanizers



All of the Light None of the Glare

Jobbers & Dealers

At last you have an opportunity to cash in on the demand for a lens that is guaranteed to kill all of the glare and none of the light.

FILMOLENS

TRADE MARK REGISTERED

is not made of glass—won't break—lasts as long as the car.

Write today for our special proposition.

Retail Price $1.75 per Pair

Our money back guarantee covers Jobber, Dealer, Consumer alike.

FILMOLENS SALES CO.

1926 Ford Bldg., Detroit, Mich.

Romon Automobile Accessory Products Include the Following Principal Items:

Romon Automatic Chassis Lubricator which automatically oils under pressure all chassis bearing points, thereby displacing all dope cups, grease, chassis squeaks and rattles.

The Romon Kabulock. A cable lock with a tremendous sale. Securely protects tires, robes, etc.

The Romon All-Brass Grease Gun. Handles grease, oil, gasoline or water. Self-loading. Clean and quick in operation.

Write for full details and quotations

ROBERTS & MONROE, INC.

35 Warren St., New York

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DIMMERS or SHADES, Headlight for Fords (Continued)

4-A Products Co., 3103 Downing St., Denver, Colo. (See page 879.)

Han-D-Dim Co., 1645 W. 100th Pl., Chicago, Ill.

Kamp Auto Supply Co., 707 Second Ave., S. Minneapolis, Minn.

L. L. L. D. Mfg. Co., 203 State St., Rochester, N. Y.

Lenslite—See Manufacturers Glass Co.

Manufacturers Glass Co., 38 S. Dearborn St., Chicago, Ill. "Lenslite."

Merrill Co., Wm. C., Security Bldg., Milwaukee, Wis. (Sole Distributors for Rex Mfg. Co., Fond du Lac, Wis.) (See page 1157.)

Onlee—See Wickwire Spencer Steel Corp.

Only Grease Gun Co., Newton, Ia.

Rex Mfg. Co.—See Merrill Co.

Thuls—See Kamp Auto Supply Co.

Toledo Cable Co., 1035 Grand Ave., Toledo, O. "Dim-Ur-Lite."

Wickwire-Spencer Steel Corp., Worcester, Mass. "Onlee." (See pages 829 and 909.)

DIRECTION INDICATING SIGNALS—See Signals, Direction Indicating or Traffic

DIRIGIBLES—See Section I

DISC GRINDERS—See Grinders, Disc

DISC WHEELS—See Wheels, Pressed & Wrought Steel

DISCS, CLUTCH—See Discs, Steel Clutch

DISCS, FABRIC CLUTCH—See Lining, Brake

DISCS, RADIATOR—See Discs or Fins, Radiator

DISCS, Universal Joint

(Flexible Fabric Discs)

Anchor Packing Co., 72 Murray St., New York, N. Y. "Ankorite." (See page 669.)

Ankorite—See Anchor Packing Co.

Continental Rubber Works, 1902 Liberty St., Erie, Pa. "Vitalic."

Thermoid Rubber Co., Trenton, N. J. (See page 543.)

Vitalic—See Continental Rubber Works.

DISCS, FRICTION—See Frictions, Fiber

DISCS or FINS, Radiator

Crosby Co., Buffalo, N. Y. (See page 899.)

Worcester Pressed Steel Co., Worcester, Mass.

DISCS, Steel Clutch

The Bettcher Stamping & Mfg. Co., 3106 W. 61st St., Cleveland, O. (See page 861.)

Bossert Corp., Utica, N. Y. (See page 897.)

Buffalo Pressed Steel Co., Buffalo, N. Y. (See page 655.)

Crosby Co., Buffalo, N. Y. (See page 899.)

Curtis Clutch Disc Co., 1562 Keinlen Ave., St. Louis, Mo. (See page 361.)

Disston & Sons, Henry (Tacony), Philadelphia, Pa.

Gier Pressed Steel Plant of Motor Wheel Corp., Lansing, Mich. (See page 361.)

Hydraulic Pressed Steel Co. of The Hydraulic Steel Co., Cleveland, O. (See page 439.)

Konigslow Mfg. Co., Otto, 3501 Perkins Ave., Cleveland, O.

Moltrup Steel Products Co., Beaver Falls, Pa. (See page 919.)

Oakes Co., Indianapolis, Ind. (See page 405.)

Paco Mfg. Co., Franklin & Seventh Sts., Peoria, Ill.

Pressed Steel Co., Luzerne St., Wilkes-Barre, Pa. (See page 903.)

Simonds Mfg. Co., North St., Fitchburg, Mass.

United & Globe Rubber Co., Prospect & Frasier Sts., Trenton, N. J.

Worcester Pressed Steel Co., Worcester, Mass. (See page 919.)

DISCS, Wheel

Adco—See American Automatic Devices Co.

American Automatic Devices Co., 515 W. Monroe St., Chicago, Ill. "Adco." (See page 643.)

Gal-Lau Steel Disc Co., 702 Market St., San Francisco, Cal.

Lack Mfg. Co., 1200 S. Third St., Paducah, Ky. "Lamco."

Lamco—See Lack Mfg. Co.

Lebanon Gear & Machine Works, 1440 Forge St., Lebanon, Pa

Schutte Body Co., Charles, 137 E. Marion St., Lancaster, Pa.

DISCS, Wheel for Fords

Adco—See American Automatic Devices Co.

American Automatic Devices Co., 515 W. Monroe St., Chicago, Ill. "Adco." (See page 643.)

Corcoran Mfg. Co., Section & Foraker Aves. (Norwood), Cincinnati, O. "Peerless."

Empire Auto Specialty Co., 1420-24 Blue Island Ave., Chicago, Ill.

Peerless—See Corcoran Mfg. Co.

DISENGAGING TRACTOR HITCHES, AUTOMATIC—See Hitches, Automatic Disengaging Tractor

DISPENSERS, GREASE—See Guns, Portable Garage Grease

DISPLAY BOARDS, GASKET—See Boards, Gasket Display

DISTANCE RECORDING METERS—See Meters, Distance Recording

DISTANCE RODS FOR FORDS—See Rods, Radius

DISTILLED WATER—See Water, Distilled

DISTRIBUTOR PARTS—See Parts, Magneto, Coil and Distributor

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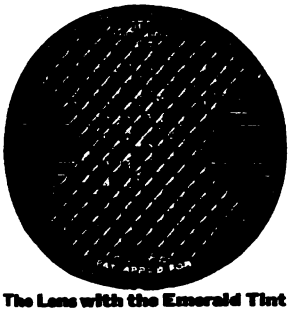

The Lens with the Emerald Tint

KOPP'S HEADLIGHT LENS

"Keeps the Cops Away"

Developed by one of the foremost illumination experts to meet the demand for an automobile headlight lens which, while complying with "Glare" laws, would give a ray powerful enough to permit of driving under all conditions—fog, snow, rain, without injurious eye strain.

LEGAL IN ALL STATES

Bends the light from the headlights downward, keeping it below the 42° level 75 ft. from the automobile and distributing it over the roadway to a width of 25 ft.

Write us for the particulars

PITTSBURGH LAMP, BRASS & GLASS CO.
PITTSBURGH, PA.

SHEET METAL STAMPINGS

FOR AUTOMOTIVE VEHICLES

THE BETTCHER STAMPING & MFG. CO.
3106 W. 61st Street CLEVELAND, OHIO

"RED SPOT" SEARCHLIGHTS ARE EASY to SELL BECAUSE

The ruby cylinder that slides forward at the touch of a button, changes the piercing white searchlight to an imperative red danger signal. It costs nothing extra, but gives the car owner added security and protection in emergency. It is an **exclusive** "Red Spot" feature, and an effective sales argument for the accessory dealer. Always sell two spot lights to every car owner, and be sure that one of them is a "Red Spot."

THE F. W. WAKEFIELD BRASS CO.
VERMILION, OHIO

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DISTRIBUTORS, SPARK—See Timers, Ignition

DIVIDERS AND CALIPERS—See Calipers and Dividers

DOGS, Lathe

Armstrong Bros. Tool Co., 304 N. Francisco Ave., Chicago, Ill. (See page 1007.)
Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn.
Bonney Vise & Tool Works, Allentown, Pa. "Indispensable." (See page 437.)
Collmer Bros., 107-11 Lincoln Way, E., South Bend, Ind. "Le Count."
Efficiency Device Corp., 198 Eighth St., Long Island City, N. Y.
Indispensable—See Bonney Vise & Tool Works.
Le Count—See Collmer Bros.
Le Count, Wm. G., Merritt St., South Norwalk, Conn.
Luts-Webster Engineering Co., 31st St. & Grays Ferry Rd., Philadelphia, Pa.
Mark Mfg. Co., 111 W. Washington St., Chicago, Ill.
O. K. Tool Holder Co., Shelton, Conn.
Oswego Tool Co., 119-27 W. First St., Oswego, N. Y.
Phoenix Hardware Co., 49-53 Illinois St., Buffalo, N. Y.
Ready Tool Co., 624 Iranistan Ave., Bridgeport, Conn. "Red-E."
Red-E—See Ready Tool Co.
Union Tool Co., 48 E. River St., Orange, Mass.
Vulcan—See Williams & Co.
West Steel Casting Co., 805-41 E. 70th St., Cleveland, O.
Western Tool & Mfg. Co., Springfield, O.
Williams & Co., J. H., 88 Richards St., Brooklyn, N. Y. "Vulcan." (See page 1081.)

DOME LIGHTS—See Lights, Electric Dome

DOOR ANTI-RATTLERS—See Anti-Rattlers, Door

DOOR BUMPERS—See Anti-Rattlers, Door

DOOR CURTAIN FITTINGS—See Openers, Curtain

DOOR HANDLES—See Handles, Door

DOOR HANGERS—See Hangers and Hinges, Garage Door

DOOR HINGES—See Hinges, Door; also Hangers and Hinges, Garage Door

DOOR HOLDERS—See Holders and Openers, Garage Door

DOOR LATCH EXTENSIONS FOR FORDS—See Extensions, Door Latch

DOOR LOCKS—See Locks, Door

DOOR OPENERS—See Holders and Openers, Garage Door; also Openers, Electric Garage Door

DOOR POCKETS FOR FORDS—See Pockets, Door

DOOR PROTECTORS—See Protectors, Door

DOORS, Special Garage

(For special garage door hangers, hinges and holders—See Hangers, Garage Door; also Holders and Openers, Garage Door; also Openers, Electric Garage Door)

Almetl—See Merchant & Evans Co.
Cornell Iron Works, 601 W. 26th St., New York, N. Y.
Merchant & Evans Co., 2035 Washington Ave., Philadelphia, Pa. "Almetl."
St. Louis Fire Door Co., 1512 Clark Ave., St. Louis, Mo.

DOPE, AIRPLANE WING—See Coatings, Wing; also Varnishes.

DOPE INJECTORS—See Guns, Grease

DOUBLE TREAD TIRE STITCHING MACHINES—See Machines, Double Tread Tire Stitching

DRAG LINKS—See Connections, Steering

DRAG LINKS FOR FORDS—See Links, Steering

DRAGS, TRUCK WHEEL REMOVING—See Cranes, Drags and Jacks, Truck Wheel Removing

DRESSERS, Emery Wheel

Baldwin, Tuthill & Bolton, 465-505 Sixth St., Grand Rapids, Mich.
Bandler & Sons, Bernard, 8 W. 40th St., New York, N. Y.
Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.
Calder, Geo. H., 623 N. Prince St., Lancaster, Pa.
Chicago Screw Co., Homan Ave. & Fillmore St., Chicago, Ill. "Huntington." (See pages 837 and 841.)
Clizbe Bros. Mfg. Co., W. Harrison St., Plymouth, Ind. "Plymouth," "Imperial."
Collmer Bros., 107-11 Lincoln Way, E., South Bend, Ind. "Huntington."
Crackerjack—See Steele Co.
Crafts, Arthur A., 135 Summer St., Boston, Mass.
Desmond-Stephan Mfg. Co., Urbana, O.
Diamond Saw & Stamping Works, 357-61 Seventh St., Buffalo, N. Y. "Sterling."
Diamond Tool Co., 326 W. Madison St., Chicago, Ill.
Diamond Tool & Die Co., 438 Asylum St., Hartford, Conn.
Federal Machine Products Co., 6442 Farnsworth St., Detroit, Mich.
H. P. Co., Midland, Mich.
Huntington—See Chicago Screw Co.
Huntington—See Collmer Screw Co.
Huntington—See Mark Mfg. Co.
Imperial—See Clizbe Bros. Mfg. Co.
Mark Mfg. Co., 111 W. Washington St., Chicago, Ill. "Huntington."
Miowna—See Whitlock Mfg. Co.
North Wales Machine Co., Center & Elm Aves., North Wales, Pa.
Peninsula Emery Wheel Co., Detroit, Mich.
Plymouth—See Clizbe Bros. Mfg. Co.

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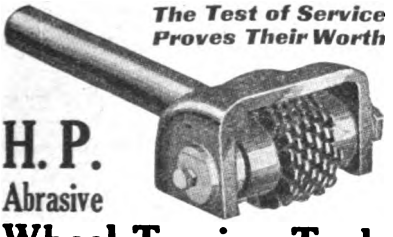

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Abrasive

Wheel Trueing Tools for PRECISION GRINDERS

Have been in continuous service in the following large plants for the past fourteen months:

The Willys Overland Co., Toledo, Ohio
The Buick Motor Car Co., Flint, Mich.
The Chevrolet Motor Co., Flint, Mich.
The Anderson Forge Co., Detroit, Mich.
Northway Motor Corp., Detroit, Mich.
Studebaker Corporation, Detroit, Mich.

These tools are effecting a saving in grinding wheel dressing costs in these large plants. WHY NOT YOURS?

H. P. ABRASIVE WHEEL TRUEING TOOLS are made in three styles, for "roughing," "finishing" and dressing the sides of wheels.

Specify size of shank when ordering.

THE H. P. COMPANY
Emery Wheel Dresser Division
MIDLAND MICHIGAN

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DRESSERS, Emery Wheel (Cont'd)

Reed Mfg. Co., W. Eighth St., Erie, Pa.
Ross Mfg. Co., 3160 W. 106th St., Cleveland, O.
Seal Oil—See Whitlock Mfg. Co.
Standard Tool Co., 6900-34 Central Ave., Cleveland, O.
Steele Co., W. M., 98-100 Beacon St., Worcester, Mass. "Crackerjack."
Sterling—See Diamond Saw & Stamping Works.
Sterling Grinding Wheel Co., Tiffin, O. (See page 481.)
Tanite Co., Stroudsburg, Pa.
Velvetone—See Whitlock Mfg. Co.
Vincent Steel Process Co., 3131 Bellevue Ave., Detroit, Mich.
Warren Axe & Tool Co., Warren, Pa.
Western Tool & Mfg. Co., Springfield, O.
Wheel Trueing Tool Co., 2180 Penobscot Bldg., Detroit, Mich. (See page 363.)
Wrigley Co., Thomas, 504 S. Sherman St., Chicago, Ill.

DRESSING, BELT—See Dressing, Clutch

DRESSING, Brake

Hoagland Co., C. W., 40 Court St., Boston, Mass "Holdzfast."
Holdzfast—See Hoagland Co.
Spoco Oil Co., 818 Larimer St., Denver, Colo.

DRESSING, CELLULOID — See Cleaners, Celluloid

DRESSING, Clutch and Belt

(For leather faced clutches and leather fan belts)

All-in-One—See Durkee-Atwood Co.
Armiger Chemical Co., 2155 W. Austin Ave., Chicago, Ill. "Rex."
Benoit, Constant A., Brooklyn, N. Y "Permatex." (See page 225.)
Blue Ribbon—See Jobbers' Mfg. Co.
Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.
Camo—See Perkins-Campbell Co
Clark's Chemical Laboratories, Dr., 5401 Ingleside Ave., Chicago, Ill.
Cook, Geo. E., 2322 Broadway, New York, N. Y.
Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie," "All-in-One."
Ensign Refining Co., 10703 Quebec Ave., Cleveland, O.
Hall-Thompson Co., Dept. A., Hartford, Conn. "Wonder Worker." (See page 227.)
Hollingshead Co., R. M., 112 N. Ninth St. Camden, N. J. "Whiz."
Hunt Co., Henry C., 261 Franklin St., Boston, Mass. (See page 117.)
Jewell Belting Co., 55 Trumbull St., Hartford, Conn.
Jobbers' Mfg. Co., 327 S. La Salle St., Chicago, Ill. "Blue Ribbon."
Livingston Co., 161 Day St., New Haven, Conn.
Mirrolike Mfg. Co., 203 Eighth St., Long Island City, N. Y.
Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 277.)
Norwesco—See Northwestern Chemical Co.
Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. "Camo." (See page 317.)
Permatex—See Benoit, Constant A.
Puritan Soap Co., 500 Exchange St., Rochester, N. Y.
Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.
Rex—See Armiger Chemical Co.
Rhoads & Son, J. E., 12 N. Third St., Philadelphia, Pa.
Rie-Nie—See Durkee-Atwood Co.
Uno Mfg. Co., 6433 Ravenswood Ave., Chicago, Ill.
Whiz—See Hollingshead Co.
Whitlock Mfg. Co., 1506 W. 112th St., Cleveland, O. "Seal Oil," "Miowna," "Velvetone."
Wonder Worker—See Hall-Thompson Co

DRESSING, Leather

(For refinishing leather tops or upholstery)

Acme White Lead & Color Works, 8250 St. Aubin Ave., Detroit, Mich.
Ajaco—See Alsdorf Corp.
All-in-One—See Durkee-Atwood Co.
Alsdorf Corp., A. J., 404 S. Wells St., Chicago, Ill. "Ajaco."
American Lacquer Co., Bruce Ave., Bridgeport, Conn.
American Paint Products Co., 736 S. Wabash Ave., Chicago, Ill.
Armiger Chemical Co., 2155 W. Austin Ave., Chicago, Ill. "Rex."
Arnold, N. B., 1 Sigourney St., Brooklyn, N. Y. "Silkup."
Arnstein, Eugene, 45 W. 26th St., Chicago, Ill. "Century."
Auto Products Mfg. Co., Buffalo, N. Y. "Rub-R-Tite," "Leath-R-Like," "Col-R-Old," "Non-Gloss," "Col-R-Drab." (See page 225.)
Auto Specialties Mfg. Co., Buffalo, N. Y. "Knu-Lack," "Dull Lac," "Re-Knu." (See page 1193.)
Autonamel Co., 94-97 St. Paul St., Rochester, N. Y.
Baum's Gasoline Co., 104 N. George St., Rome, N. Y.
Be-Be-Co.—See Boston Blacking Co.
Benoit, Constant A., Brooklyn, N. Y. (See page 225.)
Bergh Specialty Co., 1433 McCadden Pl., Los Angeles, Cal.
Bilchaco—See Billings-Chapin Co.
Billings-Chapin Co., 1163 E. 40th St., Cleveland, O. "Bilchaco," "Oughto."
Black Bear—See Damon Specialty Co.
Black-Lak—See Johnson & Son.
Blood & Co., T. L., 413 Wacouta St., St. Paul, Minn.
Blue Ribbon—See International Metal Polish Co.
Boston Blacking Co., Third & Potter Sts., Cambridge, Mass. "Be-Be-Co."
Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.
Bradley & Vrooman Co., 2639 Dearborn St., Chicago, Ill.
Bulls-Eye—See Zinsser & Co.
Century—See Arnstein, Eugene.
Col-R-Drab—See Auto Products Mfg. Co.
Col-R-Old—See Auto Products Mfg. Co.
Columbus Varnish Co., Columbus, O. (See page 365.)
Conco—See Conewango Chemical Co.
Conewango Chemical Co., Warren, Pa. "Conco."
Cummer Products Co., 2150 W. 15th St., Cleveland, O. "Perfect Auto Gloss."
Damon Specialty Co., 516 E. Ninth St., Los Angeles, Cal. "Black Bear," "Non-O-lio."

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Automobile Specialties

Makes old cars look like new

A different product for each part to make all used cars look as good as possible.

Quality goods sold in lithographed cans. Complete directions on back of each can.

Peerless Mohair Top Dressing

Waterproofs, dresses and dyes mohair, duck and canvas tops and curtains like new. Dries over night, leaving tops soft and pliable.

About one quart to dress a five-passenger car top.

Pint, 90c; Quart, $1.65

Peerless Leather Top Dressing

An oil dressing to renew the finish, and keep rubber, leather and pantasote tops and curtains soft and pliable. Dries over night. Not for seats or cushions.

About one quart to dress large five-passenger top and curtains.

Pint, 90c; Quart, $1.65

Peerless Ford Top Dressing

A dressing made for Ford top material, making a rich black gloss finish, adding life and color to old tops. Dries over night, wears indefinitely.

About one pint for a runabout top; one quart for a touring car top.

Pint, 90c; Quart, $1.65

Peerless Cushion Dressing

Without danger of washing or rubbing off. It brightens and renews the finish of leather seats and cushions. Dries in thirty minutes.

About one pint for small car and one quart for large car.

Pint, 90c; Quart, $1.65

Peerless Lamp Enamel—Gloss and Dull

A rich finish for brass, nickel or iron.

One coat covers solid over the metal or old enamel. Air drying over night.

Pint, 90c; Quart, $1.65

Peerless Cylinder Enamel—Black and Gray

A rich gloss enamel that saves cylinders and all metal engine parts from rusting. Not injured by heat, grease or gasoline. Air drying over night.

Pint, 90c; Quart, $1.65

Peerless Tire Paint

A white waterproof coating for tires containing nothing injurious to rubber and keeps tires looking bright and new.

One pint will cover five regular casings.

Pint, 90c; Quart, $1.65

Peerless Liquid Wax

A wax polish for all varnished surfaces of automobiles. In liquid form so that it is easily applied in a light even coat. Polished with ease and ready for use at once. Does not collect dust, and is not injured by water.

One pint will polish a large car.

Pint, 90c; Quart, $1.65

Peerless Auto Body Polish

A varnish food to brighten and renew the appearance of all varnished surfaces on an automobile. Applied and polished ready for use in a very few minutes.

About one pint will polish a car.

Pint, 90c; Quart, $1.65

Peerless Battery Box Black—Acid-Proof

An acid-proof coating for wood and metal that comes in contact with acid and fumes from batteries. Keeps acid from destroying wood and metal.

Pint, 90c; Quart, $1.65

Peerless Color Finishing Varnishes

The idea of an owner wanting to paint the body, wheels or chassis of his automobile his favorite color is now realized by the use of these products. The work can be done at home. The goods will cover solid with one coat and dry satisfactory over night. Very durable products. Made in eight colors.

	Straw Color	
	Medium Yellow	
Pint,	Red	Quart,
	Royal Auto Blue	
$1.00	Gray	$1.90
	Brewster Green	
	Black	
	White	

Peerless Black Japan—Extra Fine

A rich gloss air drying enamel for touch-up and all-around use on wood and metal parts of automobiles. One coat covers solid and dries over night.

Pint, 90c; Quart, $1.65

Peerless Fender Japan—Jet Black

Made especially for coating fenders and hoods with a rich black gloss enamel. Air dries and has a finish like a baked job. Dries in twenty-four to thirty-six hours.

About one quart to coat fenders of a small car.

Pint, 90c; Quart, $1.65

Peerless Mirroroid

A varnish renewer; to be applied to varnished surfaces that have lost their lustre and become dull through use. Dries over night with a fine lustre that will wear for months.

One pint to one quart to finish an automobile.

Pint, 90c: Quart, $1.65

Peerless Gasket Shellac

A strictly high grade shellac for gasket, cork carburetor floats, and such parts on an automobile. This is a high grade product cut in pure alcohol. Is not affected by gasoline.

½ Pt., 50c; 1 Pt., 90c; 1 Qt., $1.65; 2 Oz. Bot., 25c

Peerless Lining Dye

A powerful black dye that dyes all cloth lining a black uniform color over stains and faded parts alike. Dries in two to three hours.

About one quart to dye inside of five-passenger car top.

Pint, 90c; Quart, $1.65

Peerless Rim Paint—Anti-Rust

A protective coating for automobile rims, to allow tires to be removed with ease and keep rims from rusting. Dries in four to five hours.

About one pint for rims of a small car.

Pint, 90c; Quart, $1.65

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DEALERS AND JOBBERS, NOTICE!

For your special convenience we have listed our complete line so that at all times you will have our catalogue before you with dealer, garage, hardware store, and paint shop discount of 33⅓% from list prices. Ask your jobber or write us for latest catalogue, also window display material and other selling helps.

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Sole Makers Columbus, O., U.S.A.

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DRESSING, Leather (Continued)

Dibble Color Co., 129 Larned St., W., Detroit, Mich.

Detroit White Lead Works, 1960 Milwaukee, Ave., E., Detroit, Mich. "Rogers."

Dielectric Mfg. Co., 824 S. Vandeventer Ave., St. Louis, Mo.

Dix Mfg. Co., Lewistown, Pa.

du Pont de Nemours & Co., E. I., Wilmington, Del. (See page 223.)

Dull-Lac—See Auto Specialties Mfg. Co.

Dunwody Bros. Co., 513 Edgewood Ave., Atlanta, Ga. "Over All."

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie," "All-in-One."

Dutch—See Van Cleef Bros.

E-Fec-Tiv—See Permatite Mfg. Co.

Eberson-Lindsley Paint Co., 1830-32 Morgan St., St. Louis, Mo. "Leather-Lac."

Effecto—See Pratt & Lambert.

Evernew—See Felton, Sibley & Co.

F-S.—See Felton, Sibley & Co.

Felton, Sibley & Co., 136-40 N. Fourth St., Philadelphia, Pa. "Evernew." "F-S."

Fiebing Chemical Co., 238-40 Reed St., Milwaukee, Wis.

Flexo—See Rodriguez, R. E.

Glidden Sales Co., 573-75 Forest Ave., Buffalo, N. Y. "Koto."

Hall-Thompson Co., Dept. A., Hartford, Conn. "Wonder Worker," "Quad-Lac." (See page 227.)

Hauthaway & Sons, C. L., 346 Congress St., Boston, Mass.

Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whiz."

International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."

Jewell—See Wadsworth-Howland Co.

Johnson & Son, S. C., 1012 16th St., Racine, Wis. "Black-Lak."

Johnston Paint Co., R. F., Pearl & Main Sts., Cincinnati, O. "Leather Lac," "Top Fix."

K. K. K.—See Killen Kemical Ko.

Kellerman, I., 674 Ninth Ave., New York, N. Y.

Killen Kemical Ko., Lansing, Mich. "K. K. K." (See page 263.)

Kneutop—See Western Reserve Varnish Co.

Knu-Lack—See Auto Specialties Mfg. Co.

Koto—See Glidden Sales Co.

Lawrence & Co., W. W., Pittsburgh, Pa.

Leath-R-Like—See Auto Products Mfg. Co.

Leath-R-Nu—See Nu-Back Mfg. Co.

Leather-Lac—See Eberson-Lindsley Paint Co.

Leather Lac—See Johnston Paint Co.

Lucas & Co., John, 322-30 Race St., Philadelphia, Pa.

McDougall-Butler Co., 6 Evans St., Buffalo, N. Y.

Makmer—See Wadsworth, Howland Co.

Mansfield Mfg. Corp., 822 S. Clinton St., Syracuse, N. Y.

Martin-Senour Co., 2510 Quarry St., Chicago, Ill.

Mat's—See Weiss Polish Works.

Mechem, J. L., 113 E. Jackson St., Centerville, Ia

Miller Oil Products Corp., Bloomfield, N. J.

Mirrolike Mfg. Co., 203 Eighth St., Long Island City, N. Y.

Montgomery-Washburn Co., Saugerties, N. Y.

National Chemical Co., Canal Fulton, O. "Quick-Seal."

Non-Gloss—See Auto Products Mfg. Co.

Non-O-lio—See Damon Specialty Co.

Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 277.)

Norwesco—See Northwestern Chemical Co.

Nu-Back Mfg. Co., 213-15 S. Second St., St. Louis, Mo. "Leath-R-Nu."

Nutop—See Oriental Compound Co.

O'Brien Varnish Co., Johnson & Washington Sts., South Bend, Ind.

On-E-Z—See Sutorius Auto Top Co.

One-Cote—See U-co Mfg. Co.

Oriental Compound Co., 151 Cricket Ave., Ardmore, Pa. "Nu-top."

Oughto—See Billings-Chapin Co.

Outlook Co., 5518 Euclid Ave., Cleveland, O.

Over All—See Dunwody Bros. Co.

Peerless—See Columbus Varnish Co.

Perfect Auto Gloss—See Cummer Products Co.

Permatex—See Benoit, Constant A.

Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."

Pimbley Paint & Glass Co., 213 S. Sixth St., St. Joseph, Mo. "Top-Newer."

Pioneer—See Northwestern Chemical Co.

Pratt & Lambert, 79 Tonawanda St., Buffalo, N. Y. "Effecto."

Preservo—See Robeson Preservo Co.

Quad-Lac—See Hall-Thompson Co.

Quick-Seal—See National Chemical Co.

Quickwork—See Standard Varnish Works.

Re-Knu—See Auto Specialties Mfg. Co.

Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.

Red Devil Mfg. Co., 2807 Locust St., St. Louis, Mo.

Red Line, Inc., Grand Rapids, Mich. (See page 1047.)

Rex—See Armiger Chemical Co.

Rie-Nie—See Durkee-Atwood Co.

Robeson Preservo Co., White Blk., Port Huron, Mich. "Preservo."

Rodriguez, R. E., 56-58 Warren St., New York, N. Y. "Flexo."

Rogers—See Detroit White Lead Works.

Rub-R-Tite—See Auto Products Mfg. Co.

St. Louis Rubber Cement Co., 3046 Lambdin Ave., St. Louis, Mo.

Simons Mfg. Co., 2121 Michigan Ave., Chicago, Ill.

Slikup—See Arnold, N. B.

Standard Varnish Works, 90 West St., New York, N. Y. "Quickwork."

Super-Glos Mfg. Co., 1091 Mission St., San Francisco, Cal. "Top-Nu."

Sutorius Auto Top Co., 621-23 Third Ave., S., Minneapolis, Minn. "On-E-Z."

Thumb, E. W., 872 Orleans St., Chicago, Ill.

Top Fix—See Johnston Paint Co.

Top-Nu—See Super-Glos Mfg. Co.

Top-Newer—See Pimbley Paint & Glass Co.

Top Tite—See Woodtite Laboratories.

Torkelson Mfg. Co., 414 Selby Ave., St. Paul, Minn.

Twin City Varnish Co., 208 N. Wabash Ave. Chicago, Ill. "Twinco."

Twinco—See Twin City Varnish Co.

U-co Mfg. Co., 110 West 42d St., New York, N. Y. "One-Cote."

U-Sav-Your Mfg. Co., 12 Perkins Ave., Warren, Mass. (See page 725.)

Uno Mfg. Co., 6433 Ravenswood Ave., Chicago, Ill.

Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."

Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewell."

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THE AUTOMOBILE TRADE DIRECTORY

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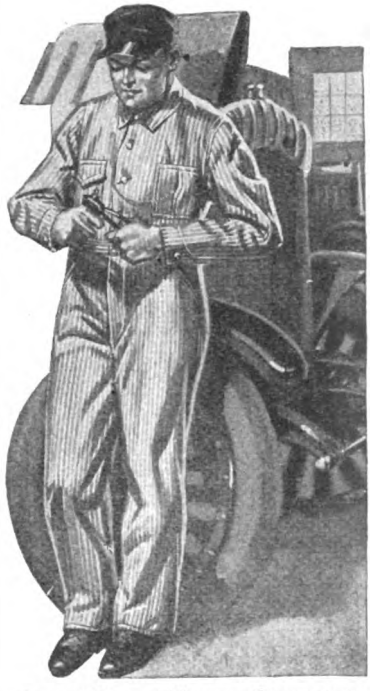
REG. U.S. PATENT OFFICE

"The Economy Garment"



One Piece Motor Garments

Outeralls are especially designed for the automotive trade. Assorted styles, materials and prices. Sleeves extra large for shoulder comfort. One piece backs with extra yardage prevent binding. The most complete, longest wearing one piece garment made. Volume production in 6 factories cuts costs and enables best values obtainable. Carried by jobbers everywhere. Ask any branch for samples. Catalog pages for jobbers.

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Greenville, Mich.

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New York, 405 Lexington Av.
Chicago, Ill., 1016 Medinah Bldg.
Philadelphia, Pa., 45 N. Third St.
Cleveland, O., 222 Marion Bldg.
Kansas City, Mo., 435 New York Life Bldg.
Milwaukee, Wis., 606 Mayer Bldg.
Indianapolis, Ind., 416 Saks Bldg.
Des Moines, Ia., 615 Locust St.
Springfield, Mass., 147 Dwight St.

$10 Tourist Motor Coat

This stylish, warm motor coat in popular olive shade retailing profitably at $10 has been the biggest sensation of the season in accessories. Every driver wants one. Ask for sample.

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DRESSING, Leather (Continued)

Wadsworth, Howland & Co., 141 Federal St., Boston, Mass. "Makmer."

Weiss Polish Works, 216 S. Winchester Ave., Chicago, Ill. "Mat's."

Western Reserve Varnish Co., Cleveland, O. "Kneutop."

West's Sons, L. M., 280 Broadway, Rockford, Ill.

Whiz—See Hollingshead Co.

Wonder Worker—See Hall-Thompson Co.

Woodtite Laboratories, Modesto, Cal. "Top Tite."

Zinsser & Co., W., 195 William St., New York, N. Y. "Bulls-Eye."

DRESSING MACHINES—See Machines, Top Bow Dressing

DRESSING, Mohair Top

(For cleaning and renovating mohair tops, slip covers or upholstery)

Acme White Lead & Color Works, 8250 St. Aubin Ave., Detroit, Mich. "Neals."

Ad-el-ite—See Adams & Elting Co.

Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite." (See page 267.)

Ajaco—See Alsdorf Corp.

All-in-One—See Durkee-Atwood Co.

Alsdorf Corp., A. J., 404 S. Wells St., Chicago, Ill. "Ajaco."

American Chemical & Mfg. Co., 617 Monticello Ave., Norfolk, Va. "Hippo."

American Paint Products Co., 736 S. Wabash Ave., Chicago, Ill.

Arnold, N. B., 1 Sigourney St., Brooklyn, N. Y. "Silkup."

Auto Specialties Mfg. Co., Buffalo, N. Y. "Dull-Lac." (See page 1193.)

Baum's Castorine Co., 104 N. George St., Rome, N. Y.

Be-Be-Co.—See Boston Blacking Co.

Benoit, Constant A., Brooklyn, N. Y. "Permatex." (See page 225.)

Bergh Specialty Co., 1435 McCadden Pl., Los Angeles, Cal.

Billings-Chapin Co., 1168 E. 40th St., Cleveland, O.

Black-Lak—See Johnson & Son.

Blood & Co., T. L., 418 Wacouta St., St. Paul, Minn.

Blue Ribbon—See International Metal Polish Co.

Boston Blacking Co., Third & Potter Sts., Cambridge, Mass. "Be-Be-Co."

Campbell Glass & Paint Co., Main & Gratiot Sts., St. Louis, Mo.

Chase, Roberts & Co., Fifth St. & West Ave., Long Island City, N. Y.

Columbus Varnish Co., Columbus, O. "Peerless." (See page 365.)

Conco—See Conewango Chemical Co.

Conewango Chemical Co., Warren, Pa. "Conco."

Dibble Color Co., 129 Larned St., W., Detroit, Mich.

Dull-Lac—See Auto Specialties Mfg. Co.

Dunwody Bros. Co., 513 Edgewood Ave., Atlanta, Ga. "Ovel All."

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."

Eberson-Lindsley Paint Co., 1830-32 Morgan St., St. Louis, Mo.

Effecto—See Pratt & Lambert.

Evans Mfg. Co., 620-22 E. 63d St., Chicago, Ill.

Evernew—See Felton, Sibley & Co.

Felton, Sibley & Co., 136-40 N. Fourth St., Philadelphia, Pa. "Evernew."

Fiebing Chemical Co., 238-40 Reed St., Milwaukee, Wis.

Glidden Sales Co., 578-75 Forest Ave., Buffalo, N. Y. "Koto."

Hall-Thompson Co., Dept. A., Hartford, Conn. "Wonder Worker," "Quad-Lac." (See page 227.)

Heath & Milligan Mfg. Co., 1833 Seward St., Chicago, Ill.

Hippo—See American Chemical & Mfg. Co.

Howard Lubricants Co., 1105 Bedford Ave., Brooklyn, N. Y. "Rome."

International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."

Johnson & Son, S. C., 1012 16th St., Racine, Wis. "Black-Lak."

Johnston Paint Co., R. F., Pearl & Main Sts., Cincinnati, O.

K. K. K.—See Killen Kemical Ko.

Killen Kemical Ko., Lansing, Mich. "K. K. K." (See page 263.)

Kneutop—See Western Reserve Varnish Co.

Koto-See Glidden Sales Co.

Leath-R-Nu—See Nu-Back Mfg. Co.

Liberty Chemical Works, 352 E. Illinois St., Chicago, Ill.

Lins Mfg. Co., W. R. (Roxborough), Philadelphia, Pa. "Linsco."

Linsco—See Lins Mfg. Co.

Lucas & Co., John, 322-30 Race St., Philadelphia, Pa.

McDougall-Butler Co., 6 Evans St., Buffalo, N. Y.

Mansfield Mfg. Co., 822 S. Clinton St., Syracuse, N. Y.

Miller Oil Products Corp., Bloomfield, N. J.

Mirrolike Mfg. Co., 203 Eighth St., Long Island City, N. Y.

Moore & Co., Benjamin, 231-33 Front St., Brooklyn, N. Y.

Nation Co., 332 W. 16th St., Los Angeles, Cal. (See page 1141.)

Neals—See Acme White Lead & Color Works.

Noble Piano Co., 4841 Woodward Ave., Detroit, Mich.

Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 277.)

Norwesco—See Northwestern Chemical Co.

Nu-Back Mfg. Co., 213-15 S. Second St., St. Louis, Mo. "Leath-R-Nu."

Nutop—See Oriental Compound Co.

O'Brien Varnish Co., Johnson & Washington Sts., South Bend, Ind.

Oriental Compound Co., 151 Cricket Ave., Ardmore, Pa. "Nutop."

Over All—See Dunwody Bros. Co.

Peerless—See Columbus Varnish Co.

Perfectite—See Price Fire & Water Proofing Co.

Perma-Loc Mfg. Co., Wilkes-Barre, Pa. (See page 695.)

Permatex—See Benoit, Constant A.

Pimbley Paint & Glass Co., 213 S. Sixth St., St. Joseph, Mo. "Top-Newer."

Pratt & Lambert, 79 Tonawanda St., Buffalo, N. Y. "Effecto."

Preservo—See Robeson Preservo Co.

Price Fire & Water Proofing Co., 42 Union St., Poughkeepsie, N. Y. "Perfectite," "Revivit," "Protectol."

Protectol—See Price Fire & Water Proofing Co.

Puritan Soap Co., 500 Exchange St., Rochester, N. Y.

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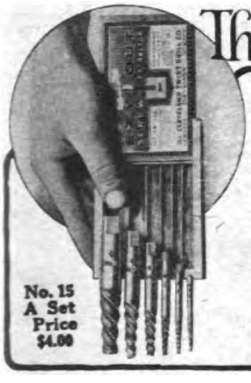

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SCREW EXTRACTOR

WHERE TO USE IT

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HOW TO USE IT

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Type	Volts—Code	R.P.M.	Capacity in Steel	Wood Boring	Reaming	Weight
2½ U	110—Union..... 220—Umber....	800	1/16 in.	½ in.	....	8
3 U	110—Uruay..... 220—Ullan.....	700	⅜ in.	⅝ in.	n.	14
4 U	110—Dulcet..... 220—Ducat.....	450	½ in.	¾ in.	⅝ n.	19
5 U	110—Urban..... 220—Urn.....	400	⅝ in.	⅞ in.	in.	26
6 U	110—Umbrag... 220—Umbog....	300	¾ in.	1 in.	½ n.	28
7 U	110—Uxel..... 220—Urmon....	250	⅞ in.	1¼ in.	⅝ n.	35

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Quad-Lac—See Hall-Thompson Co.
Rainoil—See Waterproof Oil Products Co.
Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.
Red Line, Inc., Grand Rapids, Mich. (See page 1047.)
Revivit—See Price Fire & Water Proofing Co.
Ria-Nia—See Durkee-Atwood Co
Robeson Preservo Co., White Blk., Port Huron, Mich. "Preservo."
Rome—See Howard Lubricants Co.
Simoniz—See Simons Mfg. Co.
Simons Mfg. Co., 2121 Michigan Ave., Chicago, Ill. "Simoniz."
Silkup—See Arnold, N. B.
Top-Newer—See Pimbley Paint & Glass Co.
Twin City Varnish Co., 208 N. Wabash Ave., Chicago, Ill. "Twinco."
Twinco—See Twin City Varnish Co.
Waterproof Oil Products Co., Seattle, Wash. "Rainoil."
West's Sons, L. M., 230 Broadway, Rockford, Ill.
Western Reserve Varnish Co., Cleveland, O. "Kneutop."
Wonder Worker—See Hall-Thompson Co.

DRESSING, TOP—See Dressing, Leather; also Dressing, Mohair

DRESSING, UPHOLSTERY—See Dressing, Leather

DRIFT INDICATORS, AIRPLANE—See Indicators, Airplane Drift

DRIFT PINS—See Punches, Center, Prick and Drift

DRIFT PUNCHES—See Punches, Center, Prick and Drift

DRILL CHUCKS—See Chucks, Drill

DRILL, ENAMELED—See Cloth, Enameled

DRILL GAGES—See Gages, Drill

DRILL GRINDERS—See Grinders, Drill

DRILLING BUSHINGS — See Bushings, Drilling and Reaming

DRILLING COMPOUNDS—See Lubricants, Cutting

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Kay, F. S., Reserve Bank Bldg., Kansas City, Mo.
Larson & Lundberg, 325 N. Main St., Kewanee, Ill.

DRILLS, Breast

Consolidated Tool Works, 261 Broadway, New York, N. Y. "Pilot."
Frey Co., John S., 936 Crescent Ave., Bridgeport, Conn.
Goodell-Pratt Co., Greenfield, Mass.
Malleable Iron Fittings Co., Branford, Conn. "Mifco." (See page 245.)
Mifco—See Malleable Iron Fittings Co.
Millers Falls Co., Millers Falls, Mass. "Star."
North Bros. Mfg. Co., American St. & Lehigh Ave., Philadelphia, Pa. "Yankee."
Peck, Stow & Wilcox Co., Southington, Conn "Pexto."
Pexto—See Peck, Stow & Wilcox Co.
Stanley Works, New Britain, Conn. (See page 499.)
Star—See Millers Falls Co.
Wilkinson & Co., A. J., 180-88 Washington St., Boston, Mass.
Yankee—See North Bros. Mfg. Co.

DRILLS, Centering

Cleveland Twist Drill Co., Cleveland, O. (See page 369.)
Pilot—See Consolidated Tool Works.
Republic Tool & Mfg. Co., 1399-1401 W. Ninth St., Cleveland, O. (Jobbers.) (See page 369.)
Slocomb Co., J. T., 35 Oxford St., Providence R. I.

DRILLS, GRINDERS and POLISHERS, Electric Portable

Ackerman Bros. Co., 301 W. Fourth St., New York, N. Y. (Dealers.) (See page 163.)
American Electric Tool Co., West Newton Mass.
Arnold Electric Tool Co., New London, Conn. (See page 371.)
Bilt-Rite Products Sales Co., Worcester, Mass.
Black & Decker Mfg. Co., Towson Heights, Baltimore, Md.
Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y. "Little Giant." (See page 375.)
Chicago Flexible Shaft Co., 5600 W. Roosevelt Rd., Chicago, Ill.
Cincinnati Electrical Tool Co., 1501-03 Freeman Ave., Cincinnati, O.
Clark, Jr., Electric Co., James, 520 W. Main St., Louisville, Ky. "Willey."
Coates Clipper Mfg. Co., 237 Chandler St., Worcester, Mass.
Deer Co., A. J., Hornell, N. Y. "Royal."
Dumore—See Wisconsin Electric Co.
Duntley-Dayton Co., 1416 S. Michigan Ave., Chicago, Ill. (Sole Distributors for Saphil Mfg. Co., Chicago, Ill.)
Gem Mfg. Co., Goebel & Fulton Sts., Pittsburgh, Pa.
Jilfillian Bros. Smelting & Refining Co., 217 W. Sixth St., Los Angeles, Cal.
Haskins Co., R. G., 27 S. Desplaines St., Chicago, Ill.
Hergi Mfg. Co., Bridgeport, Conn.
Hisey-Wolf Machine Co., Cincinnati, O.
Hus-Kee—See Stenman Electric Tool Co.
Ideal—See Neil & Smith Electric Tool Co.
Independent Pneumatic Tool Co., Chicago, Ill. "Thor." (See page 369.)
Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for A. H. Petersen Mfg. Co., Milwaukee, Wis.) (See page 687.)
Kesco One-Hand-Y—See Knight Engineering & Sales Co.
Knight Engineering & Sales Co., 210 W. Seventh St., Los Angeles, Cal. "Kesco One-Hand-Y." (See page 773.)
Little Giant—See Chicago Pneumatic Tool Co.
Neil & Smith Electric Tool Co., 313-15 Broadway, Cincinnati, O. "Ideal."

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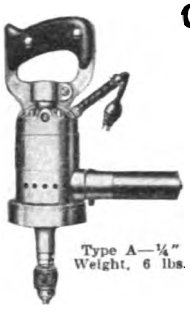
Combine Sturdiness, Lightweight and Balance with Abundant Power



Type A—¼"
Weight, 6 lbs.

Appeal to your workmen and hence speed up production and increase quality of work produced.

The Type C ½" Drill possesses super power. It is made for service and speedy, accurate work. Built in sections, each section coming apart in a unit without disturbing rest of machine — means low maintenance cost. Tool is equipped with five sets of ball bearings, insuring exceptional easy running qualities.

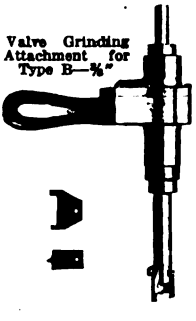
Type C—½"
Weight, 13½ lbs

Type B ⅜" Drill can be used also as Valve Grinder and Bench Grinder by means of attachments illustrated.

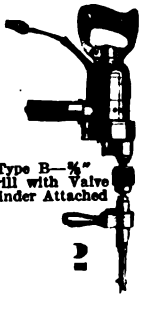
No. 1 Bench Drill provides adaptability not found in other types of bench drills. Can be set to drill at any angle, graduations being provided for accurate adjustment. Unexcelled for systematic manufacturing and tool room work.

All types equipped with Universal air-cooled motors.

Type B—⅜"
Weight, 7 lbs.

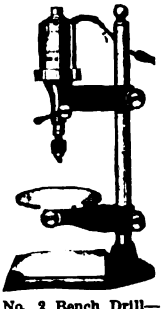


Valve Grinding Attachment for Type B—⅜"

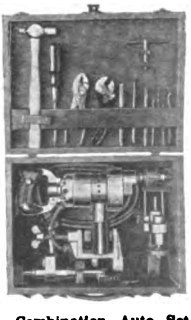


Type B—⅜" Drill with Valve Grinder Attached

No. 1 Bench Drill—¼". Angular Drilling.



No. 2 Bench Drill—¼". Vertical Drilling only.



Combination Auto Set —Type B—⅜" Drill, Valve Grinding Attachment, Emery Grinder Attachment with bracket and kit of tools, all contained in strong handsome carrying case.

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Petersen Mfg. Co.—See Jonas, C. N. & F. W.
Petterson Engineering & Mfg. Co.—See Fairbanks Co.
Racine Electric Co., Racine, Wis.
Royal—See Deer Co.
Saphil Mfg. Co.—See Duntley-Dayton Co.
Standard Electric Tool Co., Cincinnati, O. (See page 369.)
Stenman Electric Tool Co., 42 Southbridge St., Worcester, Mass. "Hus-Kee."
Stow Flexible Shaft Co., 26th & Callowhill Sts., Philadelphia, Pa.
Stow Mfg. Co., Binghamton, N. Y.
Temco Electric Motor Co., 921 Sugar St., Leipsic, O.
Thor—See Independent Pneumatic Tool Co.
U S—See United States Electrical Tool Co.
United States Electrical Tool Co., Cincinnati, O. "U. S." (See page 373.)
Van Dorn Electric Tool Co., 2978 Woodhill Rd., Cleveland, O.
Willey—See Clark, Jr., Electric Co.
Wisconsin Electric Co., 6923 16th St., Racine Wis. "Dunmore."
Wodack Electric Tool Corp., 23-27 S. Jefferson St., Chicago, Ill.

DRILLING MACHINES, Multiple Spindle

Baush Machine Tool Co., Springfield, Mass. (See page 513.)
Detroit Tool Co., 6443 St. Antoine St., Detroit, Mich.
Foote-Burt Co., 4101 St. Clair Ave., Cleveland, O.
Fox Machine Co., 1811 W. Ganson St., Jackson, Mich.
Hole Hog—See Moline Tool Co.
Moline Tool Co., 319 20th St., Moline, Ill. "Hole Hog."
Natco—See National Automatic Tool Co.
National Acme Co., Cleveland, O. (See page 657.)
National Automatic Tool Co., S. Seventh & N Sts., Richmond, Ind. "Natco."
Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 339.)

DRILLS, PNEUMATIC—See Tools, Pneumatic

DRILLS, PORTABLE—See Drills, Electric Portable

DRILLING MACHINES, Radial

American Tool Works Co., Pearl St. & Eggleston Ave., Cincinnati, O.
Baush Machine Tool Co., Springfield, Mass. (See page 513.)
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Carlton Machine Tool Co., Spring Grove Ave. & Meeker St., Cincinnati, O.
Cincinnati-Bickford Tool Co., 3220 South St., Cincinnati, O.
Dreses Machine Tool Co., 227-39 W. Micken Ave., Cincinnati, O.
Fosdick Machine Tool Co., Blue Rock & Apple Sts., Cincinnati, O.
Hammond Mfg. Co., 6545 Carnegie Ave., Cleveland, O.
Hilbert Machine Co., 2116-22 Colerain Ave., Cincinnati, O.
Morris Machine Tool Co., Court & Harriet Sts., Cincinnati, O.
Mueller Machine Tool Co., 2425-29 Colerain Ave., Cincinnati, O.
Niles-Bement-Pond Co., 111 Broadway, New York, N. Y.
Reed-Prentice Co., 53 Franklin St., Boston, Mass
Taylor & Fenn Co., 54-70 Arch St., Hartford, Conn
Western Machine Tool Works, Holland, Mich.

DRILLS, Ratchet

Armstrong Bros. Tool Co., 304 N. Francisco Ave., Chicago, Ill. (See page 1007.)
Atha Tool Co., Chapel St., Newark, N. J.
Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn. "Packer."
Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.
Diamond—See Whitman & Barnes Mfg. Co.
Goodell-Pratt Co., Greenfield, Mass.
Hunter Machine Co., Jas., 16 Main St., North Adams, Mass.
Keystone Mfg. Co., 41 Chandler St., Buffalo, N. Y.
Lowell Wrench Co., 54 Commercial St., Worcester, Mass.
Luts Co., Morris, Bambrey & Moore Sts., Philadelphia, Pa. (See page 651.)
Millers Falls Co., Millers Falls, Mass. "Star."
Oswego Tool Co., 119-27 W. First St., Oswego, N. Y. "Packer."
Packer—See Billings & Spencer Co.
Packer—See Oswego Tool Co.
Parker Co., Charles, 48 Elm St., Meriden, Conn.
Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."
Pexto—See Peck, Stow & Wilcox Co.
Pratt & Whitney Co., 111 Broadway, New York, N. Y. "Renshaw." (See page 339.)
Renshaw—See Pratt & Whitney Co.
Republic Tool & Mfg. Co., 1399-1401 W. Ninth St., Cleveland, O. (Jobbers.) (See page 369.)
Star—See Millers Falls Co.
Whitman & Barnes Mfg. Co., E. Exchange St., Akron, O. "Diamond."

DRILLING MACHINES, Sensitive

Avey—See Cincinnati Pulley Machinery Co.
Burke Machine Tool Co., Sandusky St., Conneaut, O.
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Cincinnati Pulley Machinery Co., Second & Race Sts., Cincinnati, O. "Avey."
Clark, Jr., Electric Co., James, 520 W. Main St., Louisville, Ky. "Willey."
Corbin-Church Co., New Britain, Conn.
Fox Machine Co., 1811 W. Ganson St., Jackson, Mich.
Henry & Wright Mfg. Co., 760 Windsor St., Hartford, Conn. "Wright."
Hoysradt & Case, 131 Cornell St., Kingston, N. Y.

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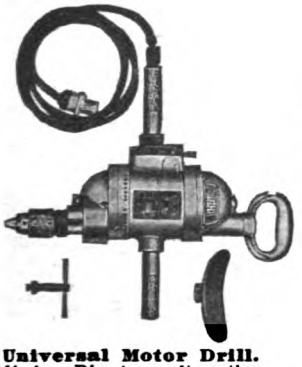
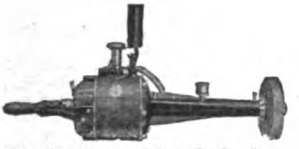
U. S. Electrical TOOLS



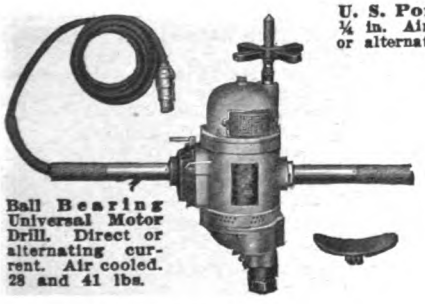
Universal Motor Drill. ½ in. Direct or alternating current, 60 cycle or less.



U. S. Portable Grinder. Direct or alternating current. Air cooled.

U. S. Portable Grinder. ¼ hp. Direct or alternating current. 18 and 21 lbs.

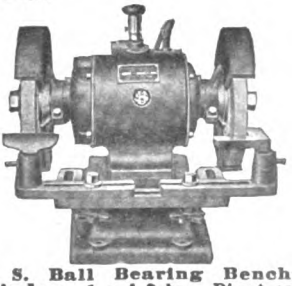
U. S. Portable Drill. ¼ in. Air cooled. Direct or alternating current.



Ball Bearing Universal Motor Drill. Direct or alternating current. Air cooled. 28 and 41 lbs.

Ball Bearing Universal Motor Drill. Direct or alternating current. Air cooled. 6 and 7 lbs.

High Speed Internal Grinder. Vertical adjustment 5 in. Air cooled. Direct or alternating current of 2 or 3 phases.



U. S. Ball Bearing Bench Grinder. 1 and 2 hp. Direct or alternating current. Pedestal furnished extra.

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Leland-Gifford Co., 1025 Southbridge St., Worcester, Mass.
Meyers—See Superior Engineering Works.
Myers Machine Tool Co., Second & Chestnut Sts., Columbia, Pa.
North Wales Machine Co., Center & Elm Aves., North Wales, Pa.
Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 339.)
Reed Co., Francis, 43 Hammond St., Worcester, Mass.
Reed-Prentice Co., 53 Franklin St., Boston, Mass.
Rockwell—See Ryerson & Son.
Ryerson & Son, Joseph T., Chicago, Ill. "Rockwell." (See page 111.)
Sipp Machine Co., Keen & Warren Sts., Paterson, N. J.
Stapf & Co., John B., Dunkirk, N. Y.
Superior Engineering Works, Small Bldg., York, Pa. "Meyers."
Taylor & Fenn Co., 54-70 Arch St., Hartford, Conn
United States Machine Tool Co., Richmond St. & McLean Ave., Cincinnati, O.
Washburn Shops, Boynton St., Worcester, Mass.
Willey—See Clark, Jr., Electric Co.
Wright—See Henry & Wright Mfg. Co.

DRILLS, TAPPING—See Drills, Upright

DRILLS, Twist

American Machine Products Co., 13th & Howard Sts., Detroit, Mich. "Ampco."
American Twist Drill Co., W. Jefferson Ave. & 21st St., Detroit, Mich.
Ampco—See American Machine Products Co.
Blancke Co., L. C., 10-12 Thomas St., New York, N. Y. (Sole Distributors for Blancke Twist Drill & Tool Co., Taunton, Mass.)
Blancke Twist Drill & Tool Co.—See Blancke Co.
Buckeye Twist Drill Co., Elm St., Alliance, O.
Cleveland Twist Drill Co., Cleveland, O. "Paragon." (See page 369.)
Colton Co., Arthur, 2600 E. Jefferson Ave., Detroit, Mich. "Colton-Detroit."
Colton-Detroit—See Colton Co.
Detroit Twist Drill Co., Detroit, Mich. (See page 955.)
Diamond—See Whitman & Barnes Mfg. Co.
Lincoln Twist Drill Co., Arlington St., Taunton, Mass.
McCarthy Drill & Tool Corp., 30 Church St., New York, N. Y.
Morse Twist Drill & Machine Co., 163 Pleasant St., New Bedford, Mass.
National Twist Drill & Tool Co., 6522 Brush St., Detroit, Mich.
New Process Twist Drill Co., 34 Court St., Taunton, Mass.
Norka—See Whitman & Barnes Mfg. Co.
Paragon—See Cleveland Twist Drill Co.
Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 339.)
Republic Tool & Mfg. Co., 1399-1401 W. Ninth St., Cleveland, O. (Jobbers.) (See page 369.)
Rich Steel Products Co., Springfield Pl., Battle Creek, Mich.
Rich Tool Co., Railway Exchange Bldg., Chicago, Ill. (See page 1017.)
Standard Tool Co., 6900-34 Central Ave., Cleveland, O.
Syracuse Twist Drill Co., 936 Grape St., Syracuse, N. Y.
Union Twist Drill Co., Chestnut Hill Ave., Athol, Mass.
Whitaker Mfg. Co., Chicago, Ill. (See page 1177.)
Whitman & Barnes Mfg. Co., E. Exchange St., Akron, O. "Norka," "Diamond."

DRILLING MACHINES, Upright

Aurora Tool Works, Aurora, Ind.
Baker Bros., Westlake Ave. & Post St., Toledo, O.
Barnes Co., W. F. & John, 301 S. Water St., Rockford, Ill.
Barnes Drill Co., 814-30 Chestnut St., Rockford, Ill.
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Cincinnati-Bickford Tool Co., 3220 South St., Cincinnati, O.
Colburn Machine Tool Co., 1038 Ivanhoe Rd., Cleveland, O.
Davis Machine Tool Co., 307 St. Paul St., Rochester, N. Y.
Detroit Garage Equipment Co., 406 E. Jefferson Ave., Detroit, Mich.
Economy—See Rockford Lathe & Drill Co.
Fosdick Machine Tool Co., Blue Rock & Apple Sts., Cincinnati, O.
Frontier Iron Works, 36 Letchworth St., Buffalo, N. Y.
Hilbert Machine Co., 2116-22 Colerain Ave., Cincinnati, O.
Hoefer Mfg. Co., Chicago & Jackson Sts., Freeport, Ill.
Hoosier Drilling Machine Co., 612-14 E. Madison St., Goshen, Ind.
Kokomo—See Superior Machine Tool Co.
Mill City Co., Minneapolis, Minn.
Niles-Bement-Pond Co., 111 Broadway, New York, N. Y.
Reed-Prentice Co., 53 Franklin St., Boston, Mass.
Rockford Lathe & Drill Co., Rockford, Ill. "Economy."
Sibley Machine Co., 304-32 E. Tutt St., South Bend, Ind.
Snyder & Son, J. E., Worcester, Mass.
Superior Machine Tool Co., E. Differbaugh St., Kokomo, Ind. "Kokomo."
Taylor & Fenn, 54-70 Arch St., Hartford, Conn.
Tschudi-McBarron Machine Co., Dayton, O.

DRIP COCKS—See Cocks

DRIP PANS—See Pans, Drip

DRIVE SHAFT BEARING END MILLS FOR FORDS—See Mills, Dry Shaft Bearing End

DRIVE GEAR BEARINGS FOR FORDS—See Bearings, Drive Gear Ball Thrust and Roller

DRIVE SHAFT BUSHING REAMERS FOR FORDS—See Reamers.

DRIVE SHAFT HOUSING BRACES FOR FORDS—See Braces, Drive Shaft Housing

DRIVE SHAFT STEADY BEARINGS—See Bearings, Drive Shaft Steady

DRIVE SHAFTS—See Shafts, Propeller

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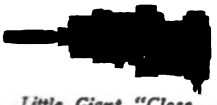
Little Giant Electric Drills
Powerful, dependable, durable. Made in several sizes for operation on A.C., D.C. or "Universal" current.

Little Giant Electric "Midget" Drills
Speedy little labor-savers, useful for countless drilling and screw-setting operations.



Little Giant "Close Quarters" Air Drills
Indispensable for drilling, reaming and tapping operations in corners and close quarters. A powerful speedy drill for general purposes.

EVERY product of the Chicago Pneumatic Tool Company embodies a built-in *quality* of design and workmanship necessary for it to bear its name. Superior performance and longer service are consequent advantages of this production standard.

The Portable Electric and Pneumatic Tools here illustrated are available in complete lines embracing various sizes and capacities. Many thousands of representative users the world over are their best advertisement.

All "Chicago Pneumatic" products or parts and maintenance service therefor may be obtained without delay from any of the district offices and service stations listed below, where they are carried constantly in stock.

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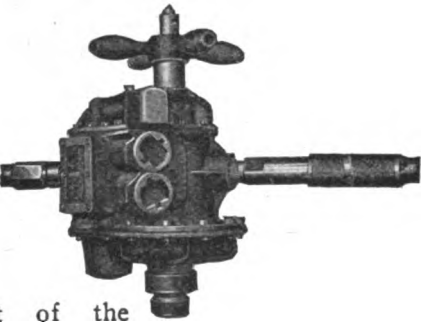

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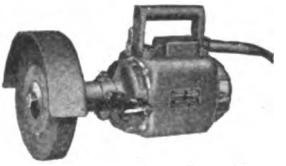
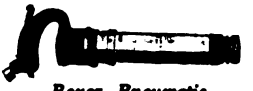


Little Giant Portable Electric Grinders
Available in many styles for flat surface, external and internal grinding operations, and for operation on either A.C., D.C. or "Universal" current.



Boyer Pneumatic Hammers
Standard the world over for riveting, chipping, calking, flue-beading, scaling, etc. Boyer Riveters are also made for pedestal, yoke and jam riveting operations.

Chicago Pneumatic Tool Co., 6 East 44th Street, New York City

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DRIVERS, Screw

Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. (See page 81.)

Auto Forge Sales Co., 80 King Ave., Columbus, O. "Columbus."

Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn.

Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J. "New Century," "O. K.," "Ideal."

Bridgeport Hardware Mfg. corp., 461 Iranistan Ave., Bridgeport, Conn. "Challenge," "Hercules," "Matchless."

Buffum Tool Co., Louisiana, Mo. (See page 529.)

C-S Co—See Chapins-Stephens Co.

Caldwell Tool Mfg. Co., 87 Warren St., New York, N. Y.

Cassady-Fairbank Mfg. Co., 6126 S. La Salle, Chicago, Ill.

Challenge — See Bridgeport Hardware Mfg. Corp.

Champion—See Union Hardware Co.

Chapin-Stephens Co., Pine Meadow, Conn. "C-S Co," "Elmore."

Cincinnati Tool Co., Main Ave., Norwood, O. "Hargrave."

Coates Clipper Mfg. Co., 237 Chandler St., Worcester, Mass.

Columbus—See Auto Forge Sales Co.

Crescent Tool Co., 204 Harrison St., Jamestown, N. Y. "Hamr-Handl."

Dahl, J. L.—See Arrow Specialty Co.

De Lisser Mfg. & Export Corp., 309 Broadway, New York, N. Y. (Sole Distributors for Hergi Mfg. Co., Bridgeport, Conn.)

Dikeman Mfg. Co., Merwin St., Norwalk, Conn.

Disston Sons, Henry, (Tacony) Philadelphia, Pa.

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. "Four-in-One."

Elmore—See Chapin-Stephens Co.

Fairmount Tool & Forging Co., 10611 Quincy Ave., Cleveland, O.

Four-in-One—See Edelmann & Co.

Gay, Geo. E., Augusta, Me.

Giant—See Tuck Mfg. Co.

Gogle Hand-Forged Tool Co., 1941 Polk St., San Francisco, Cal.

Goodell-Pratt Co., Greenfield, Mass.

Hamr-Handl—See Crescent Tool Co.

Hargrave—See Cincinnati Tool Co.

Harrold Tool & Forge Co.—See Wilbusch & Hilger.

Herbrand Co., 109-25 E. State St., Fremont, O.

Hercules—See Tuck Mfg. Co.

Hercules—See Bridgeport Hardware Mfg. Corp.

Hergi Mfg. Co., Bridgeport, Conn.

Hurwood—See Stanley Works.

Ideal—See Braunsdorf-Mueller Co.

Ives Mfg. Co., W. A., Wallingford, Conn. "Mephisto."

Jiffy—See Shultis Automotive Corp.

Lipscomb—See Ellis Co.

M-B Tool Co., Danielson, Conn.

Marcy Tool Works, Putnam, Conn.

Matchless—See Bridgeport Hardware Mfg. Corp.

Mayhew Steel Products Co., 291 Broadway, New York, N. Y. "Perpetuo," "Peerless."

Mephisto—See Ives Mfg. Co.

Millers Falls Co., Millers Falls, Mass. "Star."

Mound Tool Co., Dept. D, Seventh & Hickory Sts., St. Louis, Mo.. (See page 1109.)

Never Break—See S. & I. Co.

New Century—See Braunsdorf-Mueller Co.

North Bros. Mfg. Co., American St. & Lehigh Ave., Philadelphia, Pa. "Yankee."

O. K.—See Braunsdorf-Mueller Co.

Ohio Tool Co., Charleston, W. Va.

Osborne & Co., C. S., Newark, N. J.

Peck, Stow & Wilcox Co., Southington, Conn. "Pexto," "Solbar."

Peerless—See Mayhew Steel Products Co.

Perfect Handle—See Smith & Co.

Perpetuo—See Mayhew Steel Products Co.

Pexto—See Peck, Stow & Wilcox Co.

Red Devil—See Smith & Hemenway.

Reliable—See S. & I. Co.

Rival—See S. & I. Co.

S. & I. Co., 55-57 Governor St., Springfield Mass. "Never Break," "Reliable," "Rival."

Smith & Co., H. D., Plantsville, Conn. "Perfect Handle."

Shultis Automotive Corp., 16-22 W. 61st St., New York, N. Y. (Sole Distributors for Dahl, J. L., Hackensack, N. J.) "Jiffy." (See page 609.)

Smith & Hemenway, 180 Colt St., Irvington, N. J. "Red Devil."

Snell Mfg. Co., Fiskdale, Mass.

Solbar—See Peck, Stow & Wilcox Co.

Stanley Works, New Britain, Conn. "Hurwood." (See page 499.)

Star—See Millers Falls Co.

Starrett Co., L. S., Athol, Mass.

Stortz & Son, John, 210-12 Vine St., Philadelphia, Pa.

Swan & Co., Jas., 279 Bank St., Seymour, Conn.

Tuck Mfg. Co., 74 Ames St., Brockton, Mass. "Hercules," "Giant."

Union Hardware Co., Torrington, Conn. "Champion," "Valley."

Union Tool Co., 48 E. River St., Orange, Mass.

Valley—See Union Hardware Co.

Vichek Tool Co., Cleveland, O.

Whitaker Mfg. Co., Chicago, Ill. (See page 1177.)

Wiebusch & Hilger, 110 Lafayette St., New York, N. Y. (Sole Selling Agents for Harrold Tool & Forge Co., Columbiana, O.)

Yankee—See North Bros. Mfg. Co.

DRIVERS, SHAFT, FOR FORDS—See Mills, Dry Shaft Bearing End

DRIVING CHAIN—See Chain, Transmission; also Chain, Motorcycle Driving

DRIVING GEARS FOR FORDS—See Gears, Special Ratio

DROP FORGED WRENCHES — See Wrenches, Nut and Bolt

DROP FORGINGS—See Forgings, Drop

DROP HAMMERS—See Hammers, Power

DRUM CLAMPS FOR FORDS — See Clamps or Vises, Transmission Drum Repairing

DRUM HOLDERS, TRANSMISSION for FORDS—See Holders or Stocks, Transmission Drum

DRUMS, BRAKE—See Drums, Pressed Steel Brake

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DRUMS, Pressed Steel Brake

(See also Stampings, Metal; for Cast Drums—See Castings)

American Pulley Co., 4200 Wissahickon Ave., Philadelphia, Pa.

Bossert Corp., Utica, N. Y. (See page 897.)

Brewer Tichener Corp., Cortland, N. Y. (See page 567.)

Crosby Co., Buffalo, N. Y. (See page 899.)

Federal Pressed Steel Co., 52 Keefe Ave., Milwaukee, Wis. (See page 901.)

Gier Pressed Steel Plant of Motor Wheel Corp. (See page 361.)

Globe Machine & Stamping Co., 1200-50 W. 76th St., Cleveland, O. (See page 1049.)

Hydraulic Pressed Steel Co. of The Hydraulic Steel Co., Cleveland, O. (See page 439.)

Kelsey Wheel Co., Detroit, Mich. (See page 1063.)

Konigslow Mfg. Co., Otto E., 3501 Perkins Ave., Cleveland, O.

Maryland Metal Products Co., Hagerstown, Md.

Milwaukee—See Pressed Steel Tank Co.

Parish & Bingham Corporation, Cleveland, O. (See pages 427 to 430.)

Powell Pressed Steel Co., Hubbard, O. (See page 903.)

Pressed Steel Co., Luserne St., Wilkes-Barre, Pa. (See page 903.)

Pressed Steel Tank Co., 58th & Greenfield Aves., Milwaukee, Wis.

Savage Arms Corp., Sharon, Pa.

Worcester Pressed Steel Co., Worcester, Mass. (See page 919.)

DRY BATTERIES—See Batteries, Dry

DRY BATTERY CONNECTORS—See Connectors, Dry Battery

DRYING ROOMS—See Rooms, Paint

DUCK, ENAMELED—See Cloth, Enameled

DUMMY EXTENSIONS FOR FORDS—See Extensions, Dummy Frame

DUMMY RADIATORS FOR FORDS—See Hoods, Radiator

DUMPING BODIES—See Bodies, Special Dumping; also Bodies, Automatic Dumping, for Fords

DUST PANS—See Pans, Dust

DUST RINGS—See Washers, Felt

DUSTERS, MOTORISTS'—See Clothing, Motorists'

DYE, Top Lining

(For restoring or changing the color of top linings)

Ad-el-ite—See Adams & Elting Co.

Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite." (See page 267.)

Auto Products Mfg. Co., Buffalo, N. Y. "Cov-R-Blak." (See page 225.)

Auto Specialties Mfg. Co., Buffalo, N. Y. (See page 1193.)

Autonamel Co., 94-97 St. Paul St., Rochest N. Y.

Be-Be-Co.—See Boston Blacking Co.

Boston Blacking Co., Third & Potter St Cambridge, Mass. "Be-Be-Co."

Boyer Chemical Laboratory, 940 N. Clark S Chicago, Ill.

Columbus Varnish Co., Columbus, O. (See page 365.)

Cov-R-Blak—See Auto Products Mfg. Co.

Dutch—See Van Cleef Bros.

Durkee-Atwood Co., 40 Wilder St., Minn apolis, Minn. "Rie-Nie."

Eberson-Lindsley Paint Co., 1830-32 Morg St.. St. Louis, Mo.

Fiebing Chemical Co., 238-40 Reed St., M waukee, Wis.

Hall-Thompson Co., Dept. A., Hartfor Conn. "Wonder Worker." (See page 227.)

Hollingshead Co., R. M., 112 N. Ninth S Camden, N. J. "Whiz."

Lins Mfg. Co., W. R. (Roxborough), Phil delphia, Pa. "Linsco."

Linsco—See Lins Mfg. Co.

McDougall-Butler Co., 6 Evans St., Buffal N. Y.

Mansfield Mfg. Corp., 822 S. Clinton St., Syr cuse, N. Y.

Northwestern Chemical Co., 785 State S Marietta, O. "Norwesco." (See page 277.)

Norwesco—See Northwestern Chemical Co.

Nu-Back Mfg. Co., 213-15 S. Second St., S Louis, Mo.

Nu-Stain—See Atlas Auto Supply Co.

Re-Nu-R Products Co., 208 E. Lake St., Min neapolis, Minn.

Red Line, Inc., Grand Rapids, Mich. (See page 1047.)

Rie-Nie—See Durkee-Atwood Co.

Slikup—See Arnold, N. B.

Van Cleef Bros., 7709-11 Woodlawn Ave Chicago, Ill. "Dutch."

Whiz—See Hollingshead Co.

Wonder Worker—See Hall-Thompson Co.

DYNAMOMETERS, Electric Testing

(For testing the power of gasoline motors; see also Dynamometers, Hydraulic)

Alden, Geo. I., 48 Queen St., Worcester, Mass

Diehl Mfg. Co., Trumbull & Second Sts., Eliza bethport, N. J.

Sprague Electric Works, 527 W. 34th St., New York, N. Y.

DYNAMOMETERS, Hydraulic Testing

(For testing the power of gasoline motors; see also Dynamometers, Electric)

Burr Co., 714 N. Champaign St., Champaign, Ill. "Gulley."

Gulley—See Burr Co.

Herschell - Spillman Motor Co., North Tonawanda, N. Y. (See page 379.)

Standard Motor Construction Co., 172-80 Whiton St., Jersey City, N. J.

DYNAMOMETERS, Hydrostatic

(For testing draw-bar pull of Tractors; for Engine testing dynamometers—See Dynamometers, Electric; also Dynamometers, Hydraulic)

Szekely Co., O. E., 1516 Fourth Ave., Moline, Ill.

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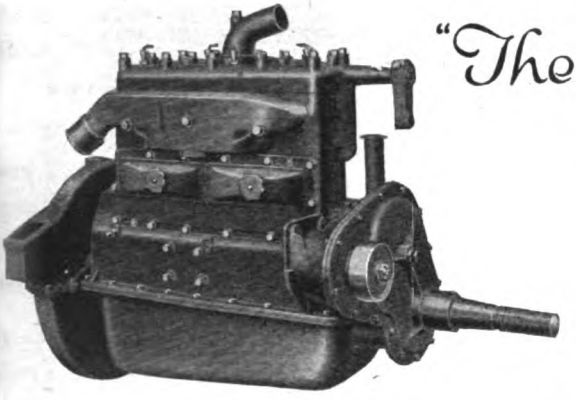

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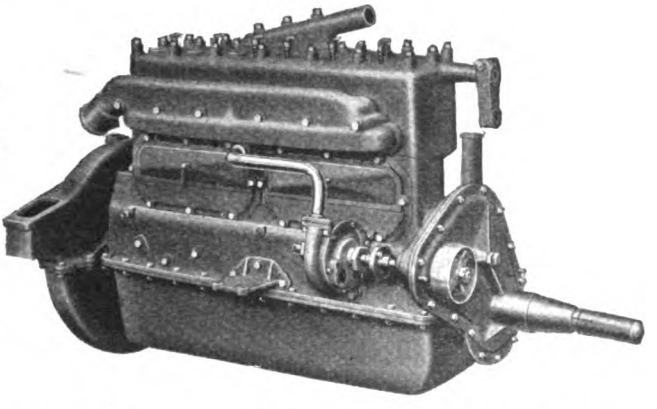

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Bore—3½"—Stroke 5"
Cylinders—Cast in block—L head removable.
Weight—440 lbs.
Suspension—3 point.
Lubrication—Force feed by Gear Pump and Splash.
Height—From center of crankshaft to top of water outlet pipe, 21¾"
Distance—From center of crankshaft to bottom of engine, 9¼"
Distance — From center of front support to center of rear supporting arm 31⅜"

Six Cylinder Model Specifications

Bore—3¼"—Stroke 5"
Cylinders—Cast in block—L head removable.
Weight—563 lbs.
Suspension—3 point.
Lubrication—Force feed by Gear Pump and Splash.
Height—From center of crankshaft to top of water outlet pipe, 21 3/16"
Distance—From center of crankshaft to bottom of engine, 9¼"
Distance — From center of front support to center of rear supporting arm 40"

The HERSCHELL-SPILLMAN MOTOR CO.

NORTH TONAWANDA, N. Y.

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DYNAMOS, BATTERY CHARGING—See Generators, Electric Lighting; also Dynamos and Motor Generators; also Systems, Electric Lighting

DYNAMOS and MOTOR GENERATORS, Battery Charging

(For Garages and Battery Charging Plants)

Acme Electric & Mfg. Co., 203 St. Clair St., N. E., Cleveland, O.

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Cushman Electric Co., 43 S. Main St., Concord, N. H.

Diehl Mfg. Co., Trumbull & Second Sts., Elizabethport, N. J.

Electric Products Co., Cleveland, O. (See page 385.)

Ellington Electric Co., 520-28 S. Fourth St., Quincy, Ill.

F.-B. Electric & Mfg. Co.—See Fairbanks Co.

Fairbanks Co., New York, N. Y. (Sole Distributors for F-B Electric & Mfg. Co., Detroit, Mich.) (See pages 137 to 140.)

Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.

Globe Electric Co., 368 Broadway, Milwaukee, Wis.

H-B—See Hobart Bros. Co.

Hobart Bros. Co., Box C. 103 Troy, O. "H-B." (See page 387.)

Holtzer-Cabot Electric Co., 125 Armory St., Boston, Mass.

Kendrick & Davis Co., Lebanon, N. H.

Kewanee Private Utilities Co., Franklin St., Kewanee, Ill.

Langstadt-Meyer Co., 767 College Ave., Appleton, Wis.

Main Electric Co., Cleveland, O.

Martin—See Northwestern Electric Co.

Northwestern Electric Co., 611-15 W. Adams St., Chicago, Ill. "Martin."

Robbins & Myers Co., Springfield, O.

Sprague Electric Works, 527 W. 34th St., New York, N. Y.

Superior Engineering Co., 332 Third Ave., Pittsburgh, Pa.

Valley Electric Co., 3157 S. Kingshighway, St. Louis, Mo. (See page 385.)

Western Electric Co., 195 Broadway, New York, N. Y.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

DYNAMOS, ELECTRIC LIGHTING AND BATTERY CHARGING—See Generators, Electric Lighting and Battery Charging.

DYNAMOS, ELECTRIC TRACTOR LIGHTING—See Generators, Tractor Electric

DYNAMOS, IGNITION—See Magnetos, Ignition

DYNAMOS, Motor Boat Electric Lighting

A-C Electrical Mfg. Co., U. B. Bldg., Dayton, Ohio.

Arrow Mfg. Co., 618-22 Broadway, Toledo, O. "Nicolite."

Leece-Neville Co., 5363 Hamilton Ave., Cleveland, O.

Nicolite—See Arrow Mfg. Co.

DYNAMOS, MOTORCYCLE ELECTR LIGHTING—See Generators, Motorcy Electric Lighting

ECONOMIZERS, FUEL—See Mixers Agitators, Fuel

ELBOWS, PIPE—See Fittings, Pipe

ELECTRIC BELLS—See Bells, Electric

ELECTRIC BRAKES—See Brakes, Electr

ELECTRIC CIGAR LIGHTERS—See Lig ers, Electric Cigar

ELECTRIC CONDENSERS—See Conden ers, Electric

ELECTRIC DRILLS—See Drills, Electr Portable

ELECTRIC ENGINE STARTERS—S Starters, Electric Engine

ELECTRIC FOOT WARMERS—See Warm ers, Electric Foot

ELECTRIC FUSES—See Fuses, Electric

ELECTRIC GARAGE DOOR OPENERS—See Openers, Electric Garage Door

ELECTRIC HEADLIGHTS—See Headlight Electric

ELECTRIC HORNS—See Horns, Electric

ELECTRIC LAMP ADAPTERS—S Adapters, Electric Lamp

ELECTRIC LAMP CONNECTORS—S Connectors, Electric Lamp

ELECTRIC LAMP SOCKETS—See Socket Electric Lamp

ELECTRIC LAMPS—See Lamps, Electric

ELECTRIC LIGHTING DYNAMOS—S Generators, Electric Lighting

ELECTRIC LIGHTING GENERATORS—See Generators, Electric Lighting

ELECTRIC LIGHTING SYSTEMS—S Systems, Electric Lighting

ELECTRIC LOCK SWITCHES—See Lock Switch and Coil

ELECTRIC MIXTURE HEATERS—S Heaters, Mixture

ELECTRIC MOTOR COMMUTATORS—See Commutators, Electric Motor

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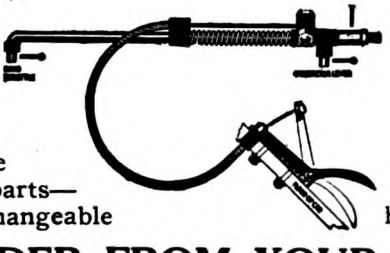

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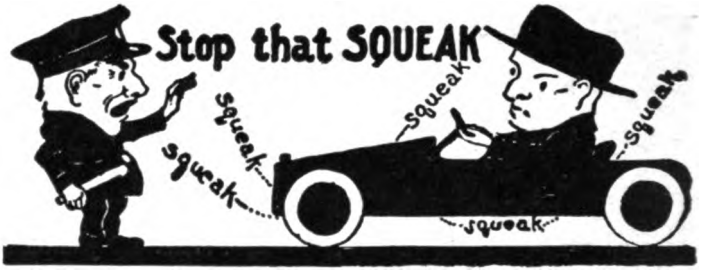

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	No. in Pkg.	Pkgs. in Crate
$1 a pint	10	10
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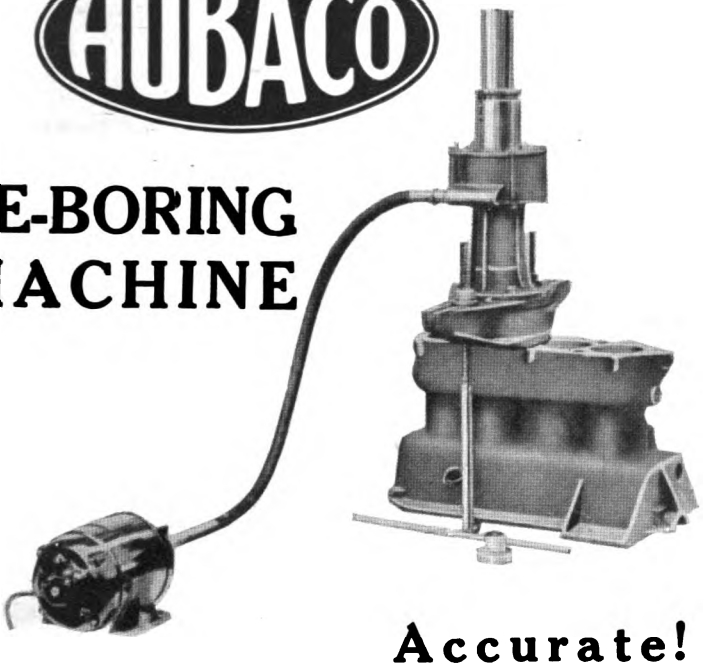

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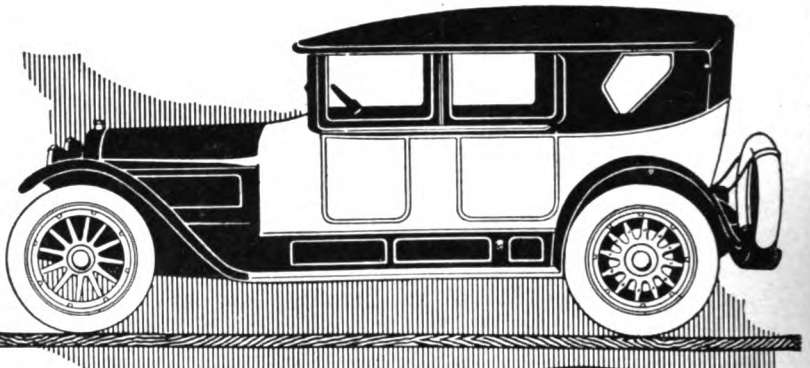

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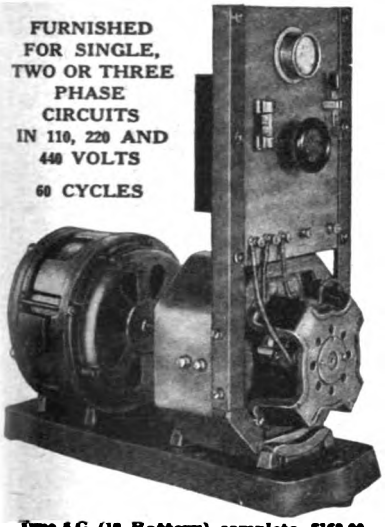
60 CYCLES



Type 6 G (10 Battery) complete, $160.00
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Prices—F. O. B.—St. Louis

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3267 S. Kingshighway, St. Louis, Missouri

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Auto Equipment Co.
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Star Machinery Co.
Seattle, Wash.
Inter-Mountain Electric Co.
Salt Lake City, Utah
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J. D. Grant Co.
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Linscott Supply Co.
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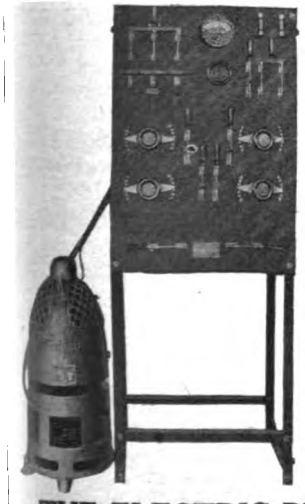

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Motor Generators 6 to 100 Amperes capacity. Economical in operation. Low upkeep cost.

One, two, four, or eight circuit switchboards—built in sections—additional circuits added when needed.

Each circuit separately controlled, giving charging rates to suit all batteries. Can be paralleled to obtain high rate for hurry-up charge.

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Harding Motor Company.....Des Moines, Iowa
Hadley Rubber & Supply Co.613 Baronne St., New Orleans, La.
N. H. Bragg & Sons.....74-76 Broad St., Bangor, Maine
Sherwood-Hall Co.....Grand Rapids, Michigan
Rehfeld Bros. Co.....Minneapolis, Minnesota
Commercial Elec. Supply Co.....St. Louis, Missouri
Albany Hdwe. & Iron Co.....Albany, New York
Welch Bros. Wholesale Hdwe. Co.....Clinton, Oklahoma
Rumsey Electric Co.....1231 Arch St., Philadelphia, Pa.
Doubleday Hill Electric Co..715 Liberty Ave., Pittsburgh, Pa., and 715 12th St. N. W.....Washington, D. C.
Dyke Motor Supply Co.....Grand Blvd., Pittsburgh, Pa.
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ELECTRIC PORTABLE GRINDERS—See Drills, Electric Portable

ELECTRIC PORTABLE POLISHERS—See Drills, Electric Portable

ELECTRIC SERVICE STATIONS—See Stations, Electric Service

ELECTRIC SIGNAL BELLS—See Bells, Electric

ELECTRIC SIGNS—See Signs, Electric

ELECTRIC SPEEDOMETER LAMPS FOR FORDS—See Lamps, Electric Speedometer

ELECTRIC STARTERS—See Starters, Electric

ELECTRIC STATIONS—See Stations, Electric Service

ELECTRIC TEST STANDS—See Stands, Electric Test

ELECTRIC TESTING INSTRUMENTS—See Instruments, Electrical Circuit Testing

ELECTRIC TIME SWITCHES — See Switches, Electric Time

ELECTRIC TIRE BUFFING MACHINES—See Machines, Electric Tire Buffing.

ELECTRIC TRACTOR HEADLIGHTS—See Headlights, Tractor Electric

ELECTRIC WELDING—See Welding, Electric

ELECTRIC WELDING MACHINES—See Machines, Electric Welding

ELECTRIC WIRING CHARTS—See Charts, Electric Wiring

ELECTRICAL CIRCUIT TESTING INSTRUMENTS—See Instruments, Electrical Circuit Testing

ELECTRICAL TEST CLIPS—See Clips, Electrical Test

ELECTRICAL TROUBLE CHARTS — See Charts, Electrical Trouble

ELECTRICALLY HEATED CLOTHING—See Clothing, Electrically Heated Aviator

ELECTRICALLY WOUND CLOCKS—See Clocks, Electrically Wound

ELECTROLYTE, Storage Battery

Contact Process Co., Abbott Rd., Buffalo, N. Y.

Du Pont de Nemours & Co., 120 Broadway, New York, N. Y.

Grasselli Chemical Co., Guardian Bldg., Cleveland, O.

Kalbfleisch Corp., 31 Union Sq., W., New York, N. Y. (See page 387.)

ELEVATING ATTACHMENTS FOR FORDS—See Brackets, Timer Elevating

ELEVATING BODIES—See Bodies, Special Dumping

ELEVATING BRACKETS FOR FORDS—See Brackets, Timer Elevating

ELEVATORS, Garage

Brodesser Mfg. Co., Burleigh & Well Sts., Milwaukee, Wis.

Buchanan Mfg. Co., 37 Van Rensselaer St., Eldorado, Ill.

Cohoes Iron Foundry & Machine Co., 37 Van Rensselaer St., Cohoes, N. Y.

Eaton & Prince Co., Chicago, Ill.

Haughton Elevator & Machine Co., 671-93 Spencer St., Toledo, O.

Kieckhefer Elevator Co., A., 1026-1104 St. Paul Ave., Milwaukee, Wis.

Kimball Bros. Co., Ninth St. & 11th Ave., Council Bluffs, Ia.

McLauthlin Co., Geo. T., Boston, Mass.

Otis Elevator Co., 11th Ave. & 26th St., New York, N. Y.

Reedy Elevator Co., Willow Ave. & 13th St., Hoboken, N. J.

Reedy Elevator Mfg. Co., J. W., Chicago, Ill.

Sedgwick Machine Works, 128 Liberty St., New York, N. Y.

Sidney Elevator Mfg. Co., Main & Shelby Sts., Sidney, O.

Speidel, J. G., W. Buttonwood & Gordon Sts., Reading, Pa.

Storm Mfg. Co., 40-50 Vesey St., Newark, N. J.

Warner Elevator Mfg. Co., 2600 Alford St., Cincinnati, O.

EMBLEM HOLDERS—See Holders, Flag, Pennant and Emblem

EMBLEMS OR FLAGS—See Flags, Pennants and Emblems

EMERGENCY CASES—See Cases, Medical

EMERGENCY CONTRACTING BRAKES FOR FORDS—See Brakes, Emergency Contracting

EMERGENCY GEAR LEVER LOCKS FOR FORDS—See Locks, Emergency Gear Lever

EMERGENCY REAR AXLE SPINDLES FOR FORDS—See Spindles, Emergency Rear Axle

EMERGENCY RIMS FOR FORDS—See Rims, Emergency

EMERGENCY ROPES—See Ropes, Tow

EMERGENCY TANKS—See Tanks, Emergency

EMERY CLOTH—See Paper, Emery and Sand

EMERY PAPER—See Paper, Emery and Sand

EMERY, POWDERED—See Compounds, Valve Grinding

EMERY WHEEL DRESSERS—See Dressers, Emery Wheel

EMERY WHEELS—See Wheels, Grinding

EMPLOYMENT AGENCIES—See Agencies, Employment

ENAMEL REMOVERS—See Removers, Paint, Enamel and Varnish

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A Complete Line of Supplies and Equipment for Battery Service Stations

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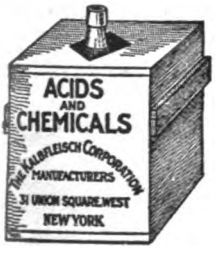
PURE
ELECTROLYTE
For Storage Batteries



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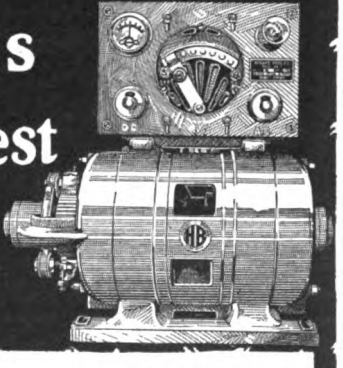

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ENAMELED CLOTH—See Cloth, Enameled

ENAMELED SIGNS—See Signs, Enameled

ENAMELS, AUTOMOBILE—See Paints, Enamel

ENAMELS, Lacquers and Finishes, Brass

(For blackening lamps, radiator and other brass work on car—See also Paints, Enamel; also Lacquers, Metal)

Ad-el-ite—See Adams & Elting Co.

Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite." (See page 267.)

Arnold, N. B., 1 Sigourney St., Brooklyn, N. Y. "Slikup."

Auto Products Mfg. Co., Buffalo, N. Y. "Ev-R-Sta." (See page 225.)

Bay State—See Wadsworth, Howland & Co.

Belrok—See Wadsworth, Howland & Co.

Benoit, Constant A., Brooklyn, N. Y. "Permatex." (See page 225.)

Bergh Specialty Co., 1435 McCadden Pl., Los Angeles, Cal.

Bissell Varnish Co., 277 Mountain Grove St., Bridgeport, Conn.

Blue Ribbon—See International Metal Polish Co.

Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.

Bradley & Vrooman Co., 2629 Dearborn St., Chicago, Ill. "C. Q. P."

C. Q. P.—See Bradley & Vrooman Co.

Celluloid Zapon Co., 200 Fifth Ave., New York, N. Y.

Chicago Varnish Co., 2100 Elston Ave., Chicago, Ill.

Cleveland Varnish Co., Cleveland, O. (See page 1041.)

Columbus Varnish Co., Columbus, O. "Peerless." (See page 365.)

Detroit White Lead Works, 1960 Milwaukee Ave., E. Detroit, Mich. "Rogers."

Dibble Color Co., 445 Larned St., W., Detroit, Mich.

Dielectric Mfg. Co., 224 S. Vandeventer Ave., St. Louis, Mo.

du Pont de Nemours & Co., E. I., Wilmington, Del. (See page 223.)

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."

Dutch—See Van Cleef Bros.

Eberson-Lindsley Paint Co., 1830-32 Morgan St., St. Louis, Mo.

Elmendorf Varnish Co., 841 Larrabee St., Chicago, Ill.

Enameling & Stamping Corp. of N. Y., Second & Webster Aves., Long Island City, N. Y.

Ev-R-Sta—See Auto Products Mfg. Co.

Hall-Thompson Co., Dept. A., Hartford, Conn. "Jet-Lac." (See page 227.)

Hollingshead Co., R. M. 112 N. Ninth St., Camden, N. J. "Whiz."

International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."

Jet-Lac—See Hall-Thompson Co.

Jewel—See Wadsworth-Howland Co.

Johnston Paint Co., R. F., Pearl & Main Sts., Cincinnati, O.

Leath-R-Nu—See Nu-Back Mfg. Co.

Liberty Chemical Works, 352 E. Illinois St., Chicago, Ill.

Martin-Senour Co., 2510 Quarry St., Chicago, Ill.

National Rubber & Specialties Co., 4423-39 Chickering Ave., Cincinnati, O. "Red Cross."

Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 277.)

Norwesco—See Northwestern Chemical Co.

Nu-Back Mfg. Co., 213-15 S. Second St., St. Louis, Mo. "Leath-R-Nu."

O'Brien Varnish Co., Johnson & Washington Sts., South Bend, Ind.

Peerless—See Columbus Varnish Co.

Permatex—See Benoit, Constant A.

Puritan Soap Co., 500 Exchange St., Rochester, N. Y.

Quickwork—See Standard Varnish Works.

Red Cross—See National Rubber & Specialties Co.

Red Line, Inc., Grand Rapids, Mich. "Spotnamel." (See page 1047.)

Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.

Rie-Nie—See Durkee-Atwood Co.

Rogers—See Detroit White Lead Works.

Royal Varnish Co., Lake Shore Ave., Toledo, O.

Slikup—See Arnold, N. B.

Spotnamel—See Red Line, Inc.

Standard Varnish Works, 90 West St., New York, N. Y. "Quickwork."

Stay-Bright Lacquer Co., 58 W. Washington St., Chicago, Ill.

Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."

Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."

Wadsworth, Howland & Co., 141 Federal St., Boston, Mass. "Belrok," "Bay State."

Whiz—See Hollingshead Co.

ENAMELS, ENGINE—See Paints, Exhaust Pipe

ENAMELS, LAMP—See Enamels, Brass

ENAMELS, RADIATOR—See Enamels, Brass

ENAMELS, RIM—See Paints, Rim; also Paints, Aluminum and Bronze

ENDLESS BELTS—See Belts, Spiral Wire; also Belts, Endless Fabric

ENDLESS BELTS FOR FORDS—See Belts, Fan

ENDS, Airplane Strut

Barcalo Mfg. Co., 225 Louisiana St., Buffalo, N. Y.

ENGINE BOLTS FOR FORDS—See Bolts, Special

ENGINE BUSHINGS FOR FORDS—See Bushings, Bronze

ENGINE CLEANERS — See Cleaners, Engine; for Steam Engine Cleaners—See Boilers, Steam Engine Cleaning

ENGINE DECARBONIZING MACHINES—See Machines, Engine Decarbonizing

ENGINE DRIVEN BILGE PUMPS—See Pumps, Motor Boat Engine Driven Bilge

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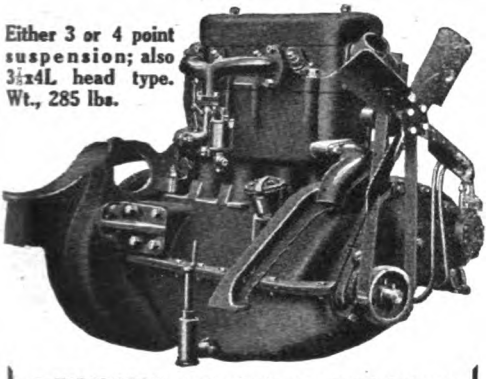
3¼-in. Bore, 5-in. Stroke—Overhead Valves



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MATTHEWS Auto & Truck MOTORS

For Economy

Thermo-Gasoline Saver

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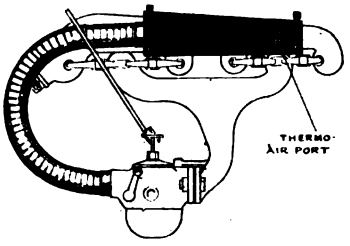

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508-510 Broome St., New York City

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If we could bring you through the plant where Le Roi Motors are made, you would see the diligent care and ingenious craftsmanship that is built into every motor.

Every little detail of balance and finish on a Le Roi is given the care typical of men who love the motors they make.

The reward for this careful manufacture is reaped in every field where Le Roi Motors are furnishing the pulse of power in machines of many descriptions.

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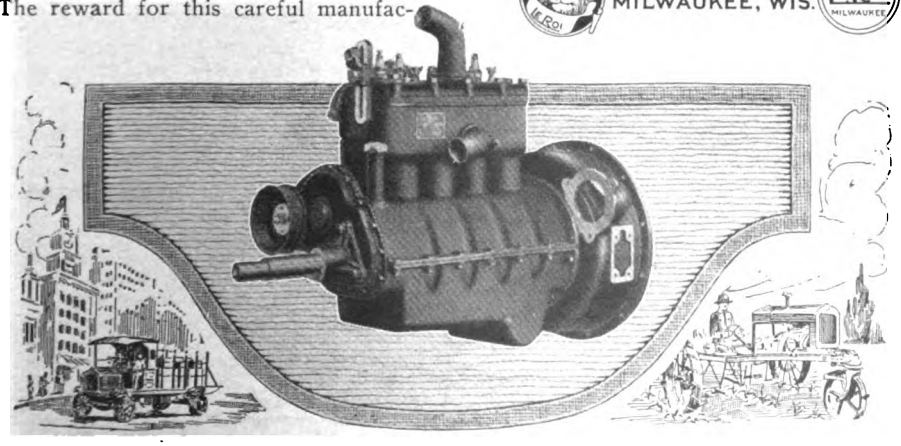

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ENGINE DRIVEN TIRE PUMPS—See Pumps, Engine Driven Tire

ENGINE GOVERNORS — See Governors, Engine

ENGINE HOODS—See Hoods, Engine

ENGINE INDICATORS—See Indicators, Gasoline Engine

ENGINE LATHES—See Lathes, Engine

ENGINE OPERATED HORNS FOR FORDS —See Horns, Engine Operated

ENGINE PRIMERS—See Primers, Gasoline Engines

ENGINE RACKS—See Stands, Engine Repair

ENGINE REPAIR BRACKETS FOR FORDS See Brackets or Supports, Engine Repair

ENGINE REPAIR SUPPORTS FOR FORDS —See Brackets or Supports, Engine Repair

ENGINE SPEED INDICATORS—See Indicators, Tractor Engine Speed

ENGINE SUPPORTS FOR FORDS—See Supports, Engine

ENGINE TESTING DYNAMOMETERS—See Dynamometers, Testing

ENGINE TESTING INSTRUMENTS—See Instruments, Engine Testing

ENGINE VALVES—See Valves, Engine Poppet

ENGINES, Aircraft Gasoline

Brennen Motor Mfg. Co., 103 Grape St., Syracuse, N. Y.

Curtiss Aeroplane & Motor Corp., Garden City, N. Y.

Curtiss Engineering Corp., Garden City, N. Y.

Detroit Manufacturers Syndicate, Majestic Bldg., Detroit, Mich. "Viking."

Duesenberg Motor Corp., 120 Broadway, New York, N. Y.

Hall-Scott Motor Car Co., 612 Market St., San Francisco, Cal.

Harriman Motor Co., South Glastonbury, Conn.

Hispano—See Wright Aeronautical Corp.

Kessler Motor Co., 275 Terminal Ave., Detroit, Mich.

Lawrence Aero Engine Corp., 644 W. 44th St., New York, N. Y.

Lincoln Motor Co., Detroit, Mich.

Miller Engineering & Foundry Works, 2652 Long Beach Ave., Los Angeles, Cal.

Murray-Willat Motor & Aeroplane Corp., 17 W. 44th St., New York, N. Y.

Roberts Motor Mfg. Co., Sandusky, O.

Steel Products Engineering Co., Springfield, O.

Sturtevant Aeroplane Co., William St. (Jamaica Plain), Boston, Mass.

Sturtevant Co., B. F., Hyde Park, Boston, Mass.

Thomas-Morse Aircraft Co., Ithaca, N. Y.

Viking—See Detroit Manufacturers Syndicate.

Wisconsin Motor Mfg. Co., Sta. A, Dept. 324, Milwaukee, Wis. (See page 391.)

Wright Aeronautical Corp., Paterson, N. J. "Hispano."

ENGINES, Automobile Gasoline

Automatic Machine Co., 113 E. Washington Ave., Bridgeport, Conn.

Avery Co. Motor Works, 57th Ave. & Mitchell St. (W. Allis), Milwaukee, Wis.

Balanced Valve Motor Co., 234 E. Water St., Milwaukee, Wis.

Beaver Mfg. Co., First St. & Oklahoma Ave., Milwaukee, Wis.

Brennan Motor Mfg. Co., 103 Grape St., Syracuse, N. Y.

Buda Co., Harvey, Ill. (See page 397.)

Buffalo Gasoline Motor Co., 1239-90 Niagara St., Buffalo, N. Y.

Bull Dog—See Weidely Motors Co.

C. A. S. Engineering Co., 790 Woodward Ave., Detroit, Mich. (Sole Distributors for H. J. Walker Co., Cleveland, O.)

Cameron Motors Corp., 2 Columbus Circle, New York, N. Y. (See page 397.)

Carrell Motor Corp., Petersburg, Ill.

Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representative.) (See page 345.)

Champion Mfg. Co., 74th St. & Kimbark Ave., Chicago, Ill. (See page 439.)

Chevrolet Motor Co., (Motor & Axle Div.) W. Kearsley St., Flint, Mich.

Climax Engineering Co., 1800 S. Fourth St., Clinton, Ia.

Colonial Motors Co., 1056 W. Warren Ave., Detroit, Mich.

Continental Motors Corp., Detroit, Mich. "Red-Seal." (See page 761.)

Duesenberg—See Rochester Motors Co.

Erd Motor Co., 300-04 Mackinaw St., Saginaw, Mich.

Falls Motors Corp., 200 Mack Ave., Sheboygan Falls, Wis.

Gould Motor & Mfg. Co., Marion, Ind.

Gray Motor Co., Detroit, Mich. (See page 397.)

Grohman Motor Mfg. Co., East Greenville, Pa.

Hercules Motor Mfg. Co., Canton, O.

Herschell - Spillman Motor Co., North Tonawanda, N. Y. (See page 379.)

Hess Motor Co., 1430 Sherman Ave., Detroit, Mich.

Highway Motors Co., Defiance, O.

Hinkley Motors Corp., 918-32 W. Fort St., Detroit, Mich. (See page 395.)

Johnson Motor Co., 45 Fort St. E., Detroit, Mich.

Kessler Motor Co., 275 Terminal Ave., Detroit, Mich.

Keuka Industries, Inc., Hammondsport, N. Y.

Krider, A. S., Montpelier, O.

Lawrence-Lewis Aeroplane Co., Peoples Gas Bldg., Chicago, Ill.

Le Roi Co., Mitchell St. & 60th Ave., Milwaukee, Wis. (See page 389.)

Lewis Motor Mfg. Co., Security Bldg., Fostoria, O.

Light Mfg. & Foundry Co., Water St., Pottstown, Pa.

Lycoming Motors Corp., Williamsport, Pa. (See page 395.)

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CONSISTENT

FOR the manufacturer of trucks, cars, or tractors who wants a power plant that he and his entire sales organization can bank on—a power plant that will hold the good will of the consumer by unfailing power service delivered at minimum cost, the Wisconsin motor is offered

In Nine Great Models

CAU	3¾x5	4 cyl.	**VAU**	4½x6	4 cyl.
EAU	4 x5	4 cyl.	**RAU**	4¾x6	4 cyl.
TAU	4 x6	4 cyl.	**RBU**	5 x6	4 cyl.
UAU	4¼x6	4 cyl.	**M**	5¾x7	4 cyl.
P	5¾x7	6 cyl.			

Every Wisconsin motor is run-in, torn down, inspected, reassembled and dynamometer-tested before shipment. It leaves the shops ***ready to run.*** Think what a saving this means to you in assembly costs.

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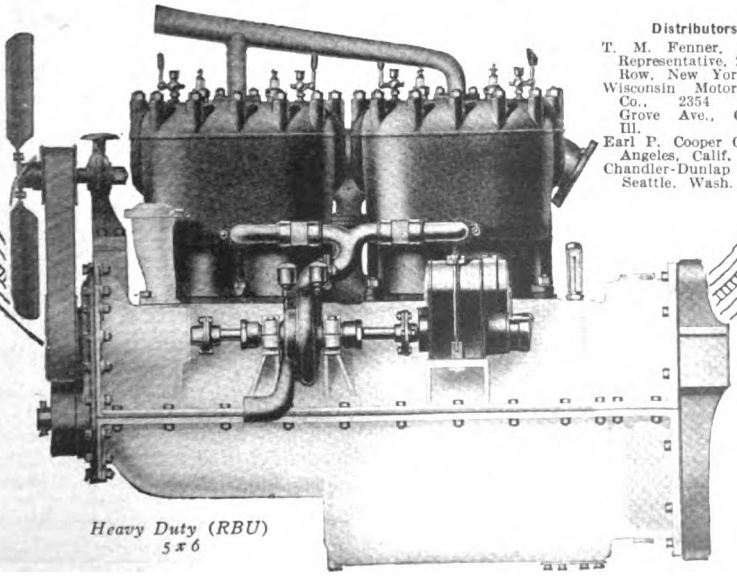
T. M. Fenner, Factory Representative, 21 Park Row, New York City.
Wisconsin Motor Parts Co., 2354 Cottage Grove Ave., Chicago, Ill.
Earl P. Cooper Co., Los Angeles, Calif.
Chandler-Dunlap Co., Seattle, Wash.



Heavy Duty (RBU)
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ENGINES, Automobile Gasoline (Continued)

Matthews Engineering Co., 460 Monroe St., Sandusky, O. (See page 389.)

Midwest Engine Co., 19th St. & Martindale Ave., Indianapolis, Ind.

Miller Engineering & Foundry Works, 2652 Long Beach Ave., Los Angeles, Cal.

Minerva Engine Co., Cleveland, O. (See page 397.)

Minneapolis Steel & Machinery Co., 29th St. & Minnehaha Ave., Minneapolis, Minn. "Twin City."

Model—See Pittsburgh Model Engine Co.

Niagara Motors Corp., Dunkirk, N. Y. (See page 943.)

Northway Motor & Mfg. Co., 4584 Maybury Ave., Detroit, Mich.

Oberting Motors Co., Cleveland, O.

Pittsburgh Model Engine Co., Lexington Ave. & McPherson St., Pittsburgh, Pa. "Model."

Power Vosburg Co., 445 W. Larned St., Detroit, Mich.

R & V—See Root and Van Dervoort Engineering Co.

Red Seal—See Continental Motors Corp.

Rochester Motors Co., 634 Lexington Ave., Rochester, N. Y. "Duesenberg."

Root & Van Dervoort Engineering Co., East Moline, Ill. "R. & V."

Rutenber Motor Co., Factory Ave., Marion, Ind.

Sphinx Motor Co., 323 N. Waller St., Chicago, Ill.

Supreme Motors Corp., Warren, O.

Teetor-Hartley Motor Co., Washington & Factory Sts., Hagerstown, Ind.

Turmo—See Turner & Moore Mfg. Co.

Turner & Moore Mfg. Co., Merritt Ave., Detroit, Mich. "Turmo."

Twin City—See Minneapolis Steel & Machinery Co.

Van Blerck Motor Co., E. First St., Monroe, Mich.

Walker Co.—See C. A. S. Sales Co.

Waukesha Motor Co., Waukesha, Wis. (See page 393.)

Weidely Motors Co., Indianapolis, Ind. "Bull Dog." (See Inside Back Cover.)

Wellman-Seaver-Morgan Co., Cleveland, O.

Wilson Foundry & Machine Co., Pontiac, Mich.

Wisconsin Motor Mfg. Co., Sta. A. Dept. 324, Milwaukee, Wis. (See page 391.)

ENGINES, Motor Boat Gasoline

Acme Engine Co., 163 Main St., San Francisco, Cal.

Airdrive—See Kemp Machine Works.

Anderson Engine Co., 4036 N. Rockwell St., Chicago, Ill.

Arrow Motor & Machine Co., 729-39 Freylinghuysen Ave., Newark, N. J. "Waterman."

Auto Engine Works, University Ave. & Griggs St., St. Paul, Minn. "Capitol."

Automatic Machine Co., 113 E. Washington St., Bridgeport, Conn. "Snapper."

Barker Factory, Norwalk, Conn.

Brennan Motor Mfg. Co., 103 Grape St., Syracuse, N. Y.

Bridgeport Motor Co., 105 Kossuth St., Bridgeport, Conn.

Bud-E—See Johnson Machine Co.

Buffalo Gasolene Motor Co., 1280-90 Niagara St., Buffalo, N. Y.

C-O—See Fairbanks-Morse & Co.

Cady, C. N., Canastota, N. Y.

Caille Perfection Motor Co., 6210 Second Ave., Detroit, Mich.

Camden Anchor-Rockland Machine Co., Camden, Me. "Knox."

Capitol—See Auto Engine Works.

Chesapeake Engine Co., Oxford, Md.

Clay Engine Mfg. Co., 864 E. 72d St., Cleveland, O. "Honest Clay."

Clift Motor Co., Bellingham, Wash.

Clifton Motor Works, 229-31 E. Clifton Ave., Cincinnati, O.

Consolidated Shipbuilding Corp. (Morris Heights), New York, N. Y.

Curtiss Aeroplane & Motor Corp., Garden City, N. Y.

Driggs Ordnance Co., 120 Broadway, New York, N. Y.

Du Pont Motors, Commerce St., Wilmington, Del.

Duesenberg Motor Corp., 120 Broadway, New York, N. Y.

Dunn Motor Works, Ogdensburg, N. Y.

Erd Motor Co., 300-04 Mackinaw St., Saginaw Mich.

Evansville Gas Engine Works, 1230 Riverside Ave., Evansville, Ind.

Evinrude Motor Co., 279 Walker St., Milwaukee, Wis.

Fairbanks-Morse & Co., 900 S. Wabash Ave., Chicago, Ill. "C-O."

Fay & Bowen Engine Co., Lake St., Geneva, N. Y.

Fisherman—See Loane Engineering Co.

Fordmarine—See New Jersey Motor Sales Co.

Frazer-Adams—See Frazer Bros. Co.

Frazer Bros. Co., 1 Grange Ave., Adams, N. Y. "Frazer-Adams."

Frisbie Motor Co., 40 College St., Middletown, Conn.

Frisco Standard—See Standard Gas Engine Co.

Fulton Mfg. Co., Erie, Pa.

Gaeth Motor Co., 2101-17 Abbey Ave., Cleveland, O.

Grand Rapids Gas Engine Co., 562 Front Ave., N. W., Grand Rapids, Mich. "Monarch."

Gray Motor Co., Detroit, Mich. (See page 397.)

Gray & Prior Machine Co., 32 Suffield St., Hartford, Conn.

Hall-Scott Motor Car Co., 612 Market St., San Francisco, Cal.

Hess Motor Co., 1430 Sherman Ave., Detroit, Mich.

Hettinger Engine Co., Grove & Henry Sts., Bridgeton, N. J.

Honest Clay—See Clay Engine Mfg. Co.

Johnson Machine Co., Carlyle, 53 Main St., Manchester, Conn. "Bud-E."

John R. Gardner—See Lakeland Motor Works

Jones Co., S. M., Toledo, O. "Ralaco."

Kahlenberg Bros. Co., 1705 12th St., Two Rivers, Wis.

Kemp Machine Works, 1215 S. Franklin St., Muncie, Ind. "Airdrive."

Kermath Mfg. Co., 5880 Commonwealth Ave., Detroit, Mich.

Keuka Industries, Inc., Hammondsport, N. Y.

King Bros., 439 E. Water St., Syracuse, N. Y.

Knock-Down Motors, 76 St. Nicholas Pl., New York, N. Y. "Shipmate."

Knox Motors Associates, Springfield, Mass.

Krider, A. S., Montpelier, O.

Lakeland Motors Works, Lakeland, Mich "John R. Gardner."

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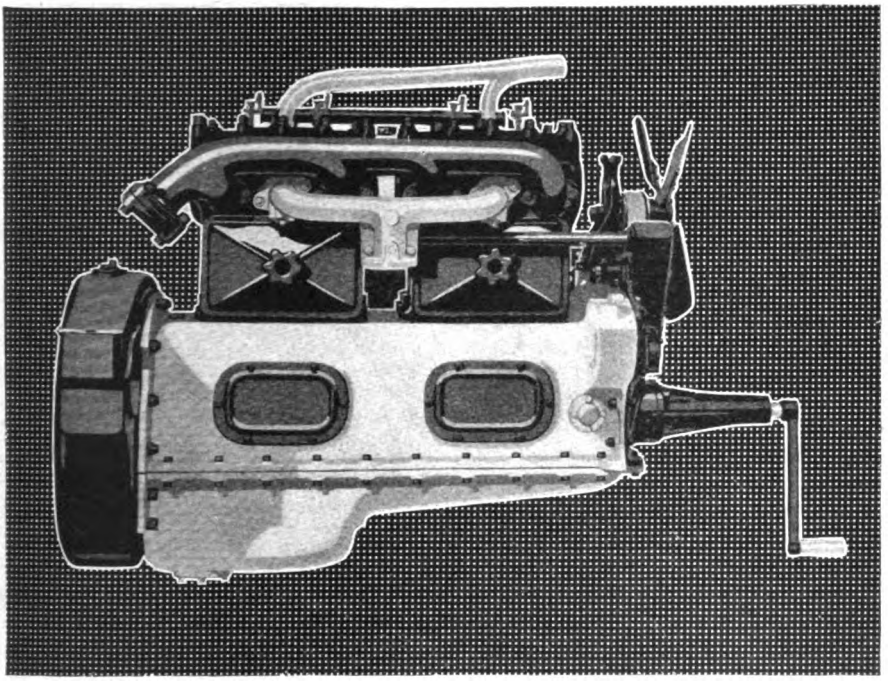

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In heavy duty motor manufacture, the name **WAUKESHA** stands for maximum achievement. It stands for the High Torque principle of construction which dominating performance has proven to be correct. It stands for *quality* both in material and workmanship.

Year after year, **WAUKESHA** Motors have been specified by leading tractor and truck manufacturers as standard equipment.

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WAUKESHA MOTOR COMPANY, WAUKESHA, WIS.

The World's Largest Builders of Tractor and Truck Motors Exclusively

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ENGINES, Motor Boat Gasoline (Continued)

Lathrop Co., J. W., Mystic, Conn.

Lewis Motor Mfg. Co., Security Bldg., Fostoria, O.

Loane Engineering Co., 306 Hanover St., Baltimore, Md. "Fisherman."

Lockwood-Ash Motor Co., 2052 Douglas St., Jackson, Mich.

M. & J. Specialty Co., 252 S. Parke St., Pontiac, Mich.

Mianus Motor Works, McGee Ave., Stamford, Conn.

Miller Engine Co., 2329-31 N. Talman Ave., Chicago, Ill.

Missouri Engine Co., 2306 N. 11th St., St. Louis, Mo.

Monarch—See Grand Rapids Gas Engine Co.

Morton Motor Co., 46 Lafayette Ave., E., Detroit, Mich.

Murray & Tregurtha Co., 340 W. First St., Boston, Mass.

New Jersey Motor Sales Co., Keyport, N. J. "Fordmarine."

New York Yacht, Launch & Engine Co., Morris Heights, N. Y. "20th Century."

Niagara Motors Corp., Dunkirk, N. Y. (See page 943.)

Olin Gas Engine Co., 10-16 Lock St., Buffalo, N. Y.

Olmstead & Sons, A. E., 21 Maple Ave., Pulaski, N. Y. "Ontario."

Ontario—See Olmstead & Sons.

Palmer Bros. Engine Co., Cos Cob, Conn.

Peerless Marine Motor Co., 2150 Niagara St., Buffalo, N. Y.

Pierce-Budd Co., Bay City, Mich.

Pittsburgh Filter & Engineering Co., Pittsburgh, Pa.

Ralaco—See Jones Co.

Red Wing Motor Co., Levee St., Red Wing, Minn. "Thorobred."

Regal Gasoline Engine Co., 59 W. Pearl St., Coldwater, Mich.

Roberts Motor Mfg. Co., Sandusky, O.

Root & Van Dervoort Engineering Co., Sixth St. & 18th Ave., East Moline, Ill.

S. R. Mfg. Co., Schenectady, N. Y.

Scripps Motor Co., 5817 Lincoln Ave., Detroit, Mich. "Thorobred."

Seattle Standard Engine Mfg. Co., Seattle, Wash.

Shipmate—See Knock-Down Motors.

Sinclair Motors, New Orleans, La. "Ultimate."

Snapper—See Automatic Machine Co.

Speedway — See Consolidated Shipbuilding Corp.

Standard Gas Engine Co., Dennison & King Sts., Oakland, Cal. "Frisco Standard."

Standard Motor Construction Co., 172-80 Whiton St., Jersey City, N. J.

Standard Oil Engine Co., Woolworth Bldg., New York, N. Y.

Stanley Co., 48 Laring Ave., Salem, Mass.

Sterling Engine Co., 1273-74 Niagara St., Buffalo, N. Y.

Sturtevant Co., B. F., Hyde Park, Boston, Mass.

Thorobred—See Red Wing Motor Co.

20th Century—See N. Y. Yacht, Launch & Engine Co.

Ultimate—See Sinclair Motors.

Universal Motor Co., 39 Ceape St., Oshkosh, Wis.

Universal Products Co., Oshkosh, Wis. "Doman."

Van Bierck Motor Co., 8 First St., Monroe, Mich.

Waterman—See Arrow Motor & Machine Co.

Wisconsin Motor Mfg. Co., Sta. A, Dept. 324, Milwaukee, Wis. (See page 391.)

Wolverine Motor Works, 35 Union Ave., Bridgeport, Conn.

ENGINES, Motor Boat Kerosene, Crude Oil, etc.

Acme Engine Co., 163 Main St., San Francisco, Cal.

Anderson Engine Co., 4636 N. Rockwell St., Chicago, Ill.

Baltimore Oil Engine Co., Baltimore, Md.

Bolinders Co., 30 Church St., New York, N. Y.

Buffalo Gasolene Motor Co., 1230-90 Niagara St., Buffalo, N. Y.

Camden Anchor-Rockland Machine Co., Camden, Me.

Carl Engine & Machine Works, 103 N. Second St., Philadelphia, Pa.

Commonwealth Motors Co., 326 W. Madison St., Chicago, Ill. "Quayle."

Clay Engine Mfg. Co., 864 E. 72d St., Cleveland, O. "Honest Clay."

Craig Engine & Machine Works, James, 307 Garfield Blvd., Jersey City, N. J.

Dodge Sales & Engineering Co., Mishawaka, Ind.

Dunn Motor Works, Ogdensburg, N. Y.

Grand Rapids Gas Engine Co., 562 Front Ave., N. W., Grand Rapids, Mich. "Monarch."

Gray & Prior Machine Co., 32 Suffield St., Hartford, Conn.

Hatch Engine Co., 2-4 Stone St., New York, N. Y.

Harris Engine Co., Wilmington, Del.

Hitchcock—See Standard Oil Engine Co.

Honest Clay—See Clay Engine Mfg. Co.

Jacobson Gas Engine Co., Albany, N. Y.

Kahlenberg Bros. Co., 1705 13th St., Two Rivers, Wis.

Lathrop Co., J. W., Mystic, Conn.

Lazier Gas Engine Co., 190 Main St., Buffalo, N. Y.

Meits Corp., August, 128 Mott St., New York, N. Y.

Mianus Motor Works, McGee Ave., Stamford, Conn.

Miller Engine Co., 2329-31 N. Talman Ave., Chicago, Ill.

Missouri Engine Co., 2306 N. 11th St., St. Louis, Mo.

Monarch—See Grand Rapids Gas Engine Co.

Nilson-Miller Co., 1300-06 Hudson St., Hoboken, N. J.

Olin Gas Engine Co., 10-16 Lock St., Buffalo, N. Y.

Quayle—See Commonwealth Motors Co.

Red Wing Motor Co., Levee St., Red Wing, Minn. "Thorobred."

Scripps Motor Co., 5817 Lincoln Ave., Detroit, Mich. "Thorobred."

Seattle Standard Engine Mfg. Co., Seattle, Wash.

Standard Oil Engine Co., 130 Seaview Ave., Bridgeport, Conn. "Hitchcock."

Thorobred—See Red Wing Motor Co.

Venn-Severin Machine Co., 1317-25 W. North Ave., Chicago, Ill.

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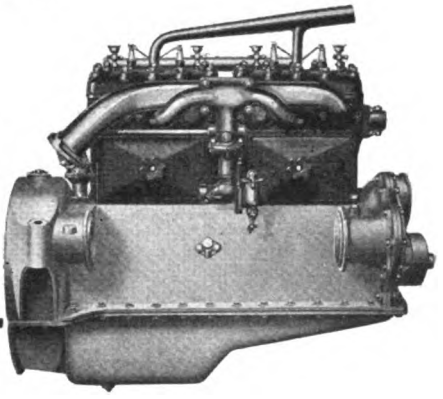
HEAVY DUTY AUTOMOTIVE

ENGINES

HINKLEY MOTORS CORPORATION

DETROIT

For Trucks of One to Six Tons Capacity



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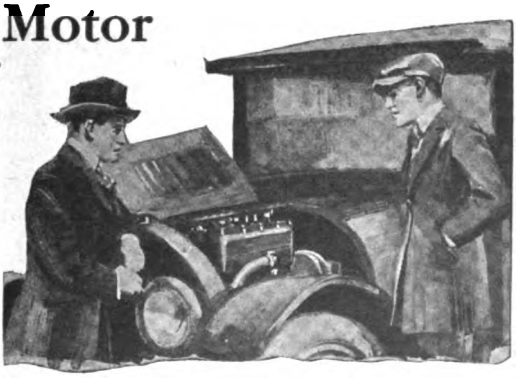
An Equipment Asset of More Than Timely Value

The Lycoming is not a special motor designed to meet a transient condition.

Ten years ago this organization dedicated itself to the creation of a motor with characteristics that would meet what we then and now believe to be the real representative American car market—the simple, economical, substantial lower priced four.

Our confidence in that type of car as representing the really characteristic American type has been justified in the steady cumulative Lycoming demand that has created here in Williamsport one of the largest, if not the largest plant, in the world devoted to specialized four-cylinder motor manufacture.



LYCOMING MOTORS

Lycoming Motors Corporation

WILLIAMSPORT, PA.

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ENGINES, Motor Boat Kerosene, Crude Oil, etc. (Continued)

Wolverine Motor Works, 35 Union Ave., Bridgeport, Conn.

Wright Machine Co., 331 E. Second St., Owensboro, Ky.

ENGINES, Motor Boat Outboard or Detachable

Aerothrust Engine Co., 50 Madison St., La Porte, Ind.

Allen, Clarence J., 645 S. Pierce St., Milwaukee, Wis. "Amphion."

Amphion—See Allen, Clarence J.

Arrow Motor & Machine Co., Newark, N. J. "Waterman Porta."

Caille Perfection Motor Co., 6210 Second Ave., Detroit, Mich.

Evinrude Motor Co., 279 Walker St., Milwaukee, Wis.

Koban Mfg. Co., 341 S. Water St., Milwaukee, Wis.

Lockwood-Ash Motor Co., 2052 Douglas St., Jackson, Mich.

Waterman Porto—See Arrow Motor & Machine Co.

ENGINES, Motorcycle Gasoline

North Chicago Machine Co., Commonwealth Ave. & 22d St., North Chicago, Ill. "Phantom."

Phantom—See North Chicago Machine Co.

Spacke Machine & Tool Co., 600 Madison Ave., Indianapolis, Ind.

ENGINES, Automobile Steam

Stanley Motor Carriage Co., Newton, Mass.

ENGINES, Tractor Gasoline

Automatic Machine Co., 113 E. Washington Ave., Bridgeport, Conn.

Beaver Mfg. Co., First St. & Oklahoma Ave., Milwaukee, Wis.

Brennan Motor Mfg. Co., 103 Grape St., Syracuse, N. Y.

Bridgeport Motor Co., 105 Kossuth St., Bridgeport, Conn.

Buda Co., Harvey, Ill. (See page 397.)

Buffalo Gasolene Motor Co., 1280-90 Niagara St., Buffalo, N. Y.

Bull Dog—See Weidely Motors Co.

Carrell Motor Corp., Petersburg, Ill.

Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representative.) (See page 345.)

Chief Motor Co., Port Huron, Mich.

Continental Motors Corp., Detroit, Mich. "Red Seal." (See page 761.)

Duesenberg Motor Corp., 120 Broadway, New York, N. Y.

Erd Motor Co., 300-04 Mackinaw St., Saginaw, Mich.

Gray Motor Co., Detroit, Mich. (See page 397.)

Grohman Motor Mfg. Co., East Greenville, Pa.

Hercules Motor Mfg. Co., Canton, O.

Herschell-Spillman Motor Co., North Tonawanda, N. Y. (See page 379.)

Highway Motors Co., Defiance, O.

Hinkley Motors Corp., Detroit, Mich. (See page 395.)

Johnson Motor Co., 45 Fort St. E., Detroit, Mich.

Knox Motors Associates, Springfield, Mass.

L. M. F.—See Light Mfg. & Foundry Co.

Le Roi Co., Mitchell St. & 60th Ave., Milwaukee, Wis. (See page 389.)

Light Mfg. & Foundry Co., Water St., Pottstown, Pa. "L. M. F."

Matthews Engineering Co., 460 Monroe St., Sandusky, O. (See page 389.)

Midwest Engine Co., 19th St. & Martindale Ave., Indianapolis, Ind.

Minerva Engine Co., Cleveland, O. (See page 397.)

Minneapolis Steel & Machinery Co., 29th St. & Minnehaha Ave., Minneapolis, Minn. "Twin City."

Niagara Motors Corp., Dunkirk, N. Y. (See page 943.)

Northway Motor & Mfg. Co., 4584 Maybury Ave., Detroit, Mich.

Pittsburgh Model Engine Co., Lexington Ave. & McPherson St., Pittsburgh, Pa.

R. & V.—See Root and Van Dervoort Engineering Co.

Red Seal—See Continental Motors Corp.

Red Wing Motor Co., Levee St., Red Wing, Minn. "Thorobred."

Reliable Tractor & Engine Co., Portsmouth, O.

Rochester Motors Co., 634 Lexington Ave., Rochester, N. Y.

Root & Van Dervoort Engineering Co., East Moline, Ill. "R. & V."

Scripps Motor Co., 5817 Lincoln Ave., Detroit, Mich. "Thorobred."

Sphinx Motor Co., 323 N. Waller St., Chicago, Ill.

Stearns Motor Mfg. Co., Ludington, Mich.

Sterling Engine Co., 1252-72 Niagara St., Buffalo, N. Y.

Supreme Motors Corp, Perkins Rd., Warren, O.

Thorobred—See Red Wing Motor Co.

Thorobred—See Scripps Motor Co.

Toro Mfg. Co., 3042 Snelling Ave., Minneapolis, Minn.

Townsend Mfg. Co., S. Franklin St. & Western Ave., Janesville, Wis.

Turmo—See Turner & Moore.

Turner & Moore Mfg. Co., 4660 Merritt Ave., Detroit, Mich. "Turmo."

Twin City—See Minneapolis Steel & Machinery Co.

Universal Products Co., Oshkosh, Wis. "Doman."

Walker Co., H. J., 131st St. & Taft Ave., Cleveland, O.

Waukesha Motor Co., Waukesha, Wis. (See page 393.)

Willson Co., H. J., Cleveland, O.

Weidely Motors Co., Indianapolis, Ind. "Bull Dog." (See Inside Back Cover.)

Wellman-Seaver-Morgan Co., Cleveland, O.

Wisconsin Motor Mfg. Co., Sta. A, Dept. 324, Milwaukee, Wis. (See page 391.)

ENGINES, Tractor Kerosene

Bolinders Co., 30 Church St., New York, N. Y.

Buffalo Gasoline Motor Co., 1280-90 Niagara St., Buffalo, N. Y.

Climax Engineering Co., 1300 S. Fourth St., Clinton, Ia.

Gray Motor Co., Detroit, Mich. (See page 397.)

Hatch Engine Co., 3-4 Stone St., New York, N. Y.

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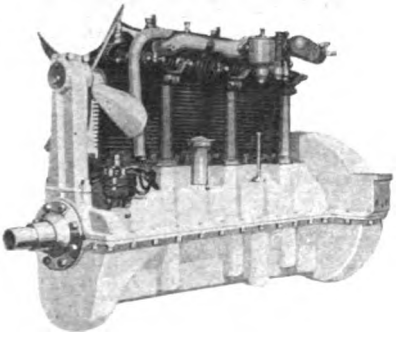

The Cameron Air Cooled Motor

The finality of motor design that makes cooling flanges practical. Not a water cooled motor, but a special design which includes direct opposing inlet and exhaust valves, smooth interior cylinder head, and complete valve operating mechanism which works submerged in oil. These features, together with oversized valves and special valve cages, make the Cameron Motor "even cooling." The flanges or fins surrounding cylinders and valve cages, complete the work. These motors carry heat to the point of maximum efficiency only. They cannot deviate from this pre-determined temperature point. Write for full information.

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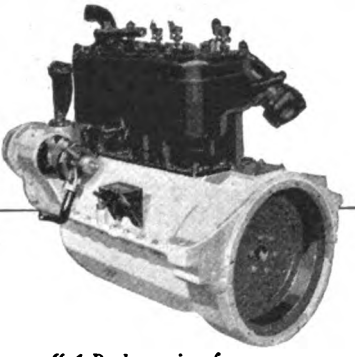
NEW YORK



"A Buda engine for every automotive need"

DTU—3½ in.	x 5¼ in.		4 cyl.
CTU—3¼ in.	x 5¼ in.		4 cyl.
FTU—4 in.	x 5½ in.		4 cyl.
ETU—4⅛ in.	x 5½ in.		4 cyl.
XTU—4¼ in.	x 6 in.		4 cyl.
YTU—4½ in.	x 6 in.		4 cyl.
ATU—4¾ in.	x 6½ in.		4 cyl.
BTU—5 in.	x 6½ in.		4 cyl.

THE BUDA COMPANY
Harvey (CHICAGO SUBURB), Ill.
ESTABLISHED 1881

BUDA
The ENGINE

New GRAY

VICTORY MOTOR

3½x5 —— Four Cylinder *Overhead Valve,* up-to-date. For Light Trucks, Cultivators, Light Tractors, Pleasure Cars.

Hot-spot manifold—double hot-spot cylinder head. *Uses low grade fuel efficiently.*

Very powerful and flexible motor. New Pleasure car model for 1920. Samples Ready.

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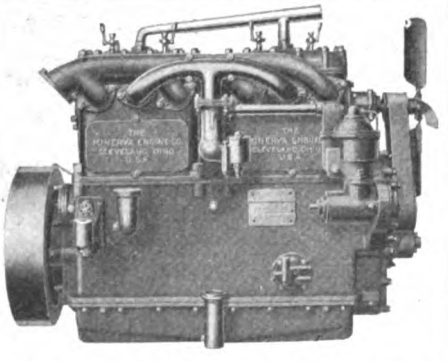

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Bore 4½ in.—Stroke 6 in.
Cylinders—L-Head, Detachable.
Lubrication—Forced Feed.
Cooling—Centrifugal pump.
Ignition—High Tension Mag.
Governor—Own Make, Integral.
B. H. P. at 900 R. P. M.—40.

Write for "Bulletin B"

The Minerva Engine Co.
CLEVELAND, OHIO

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ENGINES, Tractor Kerosene (Continued)

Minneapolis Steel & Machinery Co., 29th St. & Minnehaha Ave., Minneapolis, Minn. "Twin City."

Red Wing Motor Co., Levee St., Red Wing, Minn. "Thorobred."

Scripps Motor Co., 5817 Lincoln Ave., Detroit, Mich. "Thorobred."

Thorobred—See Red Wing Motor Co.

Thorobred—See Scripps Motor Co.

Twin City—See Minneapolis Steel & Machinery Co.

ENVELOPES, TOP—See Covers, Top

EQUALIZERS, Brake, for Fords

(Device to ensure the equal application of the brakes on both rear wheels to prevent skidding)

Cross Gear & Engine Co., 3260 Bellevue Ave., Detroit, Mich. (See page 1191.)

R-E—See Roose Mfg. Co.

Roose Mfg. Co., 327-33 W. Main St., Louisville, Ky. "R-E." (See pages 129, 151, 325 and 327.)

EQUALIZERS, Trailer Brake

Raybestos Co., Bridgeport, Conn. (See page 573.)

EQUALIZING GEARS—See Gears, Differential

ESCUTCHEON PINS—See Pins, Escutcheon

ETHER, Denatured

(For priming engines in cold weather to facilitate starting)

Albany Chemical Co., 2-24 Broadway, Albany, N. Y.

EXHAUST BOXES, MOTOR BOAT, Underwater—See Boxes, Motor Boat Underwater Exhaust

EXHAUST DEFLECTORS FOR FORDS—See Deflectors, Exhaust

EXHAUST HORNS—See Horns, Exhaust

EXHAUST MANIFOLDS—See Manifolds

EXHAUST MUFFLERS—See Mufflers, Exhaust

EXHAUST PIPE PAINTS—See Paints, Exhaust Pipe

EXHAUST SILENCERS—See Mufflers, Exhaust

EXHAUST WHISTLES—See Horns, Exhaust

EXPANDERS, Boiler Tube

Ajax Mfg. Co., 348 Jackson St., Pittsburgh (N. S.), Pa.

Martens Co., E. A., Lafayette, Ind.

EXPANDERS, PISTON RING—See Rings, Piston, Ring Expanding

EXPANDERS, RIM—See Tools, Demountable Rim Contracting

EXPANDING BRAKES—See Brakes, Expanding

EXPANDING MANDRELS—See Mandrels, Expanding

EXPLOSION WHISTLES—See Horns, Exhaust

EXPOSITIONS AND SHOWS

(Covering Expositions and Shows advertising in this publication.)

Automotive Accessory & Machine Exhibition, 1533-37 S. Michigan Ave., Chicago, Ill. (See page opposite Last Page.)

EXTENSION REELS—See Reels, Automatic Extension Lamp

EXTENSION TOOL HANDLES—See Handles, Extension Tool

EXTENSION UNITS FOR FORDS—See Converters

EXTENSIONS, Door Latch for Fords

Finch—See Wayland Specialty Mfg. Co.

Wayland Specialty Mfg. Co., Wayland, N. Y. "Finch." (See page 399.)

EXTENSIONS, Dummy Frame, for Fords

(For attaching to front of car to give appearance of springs)

Corcoran Mfg. Co., 4634 Spring Grove Ave., Cincinnati, O. "Peerless."

Peerless—See Corcoran Mfg. Co.

EXTENSIONS, Gear Shift Lever

(To enable driver to shift gears without unnecessary reaching)

Hughes-Mellins—See M. & H. Novelty Co.

Johnson Automobile Lock Co., 2309 Archer Ave., Chicago, Ill. (See page 585.)

M. & H. Novelty Co., 1468 W. 28th St., Los Angeles, Cal. "Hughes-Mellins." (See page 399.)

EXTENSIONS, Gear Shift Lever for Fords

(To enable driver to shift gears without unnecessary reaching)

Extendor—See S. & P. Mfg. Co.

Hughes-Mellins—See M. & H. Novelty Co.

M. & H. Novelty Co., 1468 W. 28th St., Los Angeles, Cal. "Hughes-Mellins." (See page 399.)

S. & P. Mfg. Co., 255 W. 169th St., New York, N. Y. "Extendor." (See page 283.)

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1600 Wiring Diagrams

New Cars and Old Ones
Every One Authentic

"The Auto Electrician's Guide"

Two handy volumes at a cost of less than a cent apiece for diagrams that took us three years to compile.

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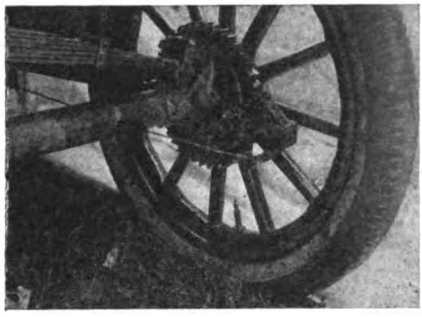

AUTO-STOP

"You're Safe in its Grip"

for Fords

When your engine stalls on a steep hill—your brakes fail you—you simply step on a pedal like a cutout. You can't slip back when equipped with an Auto-Stop. Saves wear and tear on tires and brakes in parking, and requires no adjustments. Attached to rear wheel of Ford. Anyone can install it. Put it on your Ford for 30 days. If not satisfied, simply return it.

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Fitz-Awl Valve Spring Compressor and Valve Lifter—A heavy duty lifter, made of cold rolled steel and polished. Extreme range of adjustment, and lift and adjustment is very simple. Folds up.

Wilkins Low Gear Control—A comfort device for Ford owners.

Dealers and Jobbers—Write for the Wayland proposition.

Wayland Specialty Mfg. Co., Inc.

Wayland :: :: N. Y.

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EXTENSIONS, Pedal

(For clutch and brake pedals so that adjustments in length may be made)

Fit-All Adjustable Pedal Co., 18 Charlotte St., Tiffin, O.

Gemco Mfg. Co., 606 S. Pierce St., Milwaukee, Wis. (See pages 174 and 175.)

Hill Pump Valve Co., Belmont & Knox Aves., Chicago, Ill.

Rich Mfg. Co., 1777 Broadway, New York, N. Y. "Rico." (See page 1223.)

Rico—See Rich Mfg. Co.

EXTENSIONS, Pedal, for Fords

Hill Mfg. Co., H. H., Upper Montclair, N. J.

EXTENSIONS, SPOT LIGHT HANDLE—See Handles, Extension Spot Light

EXTINGUISHERS, Automobile Fire

(For Car Equipment)

Auto-Fyr—See U. S. Fire Extinguisher Co.

Boyce-Veeder Corp., Queens Subway Bldg., Long Island City, N. Y. (See page 401.)

Buffalo Chemical Fire Extinguisher Co., 61-69 Carroll St., Buffalo, N. Y. "Niagara."

Feumort Mfg. Co., 160 Fifth Ave., New York, N. Y.

Fire-Out Mfg. Co., 159 N. Second St., Philadelphia, Pa.

Fire Fighting Devices Co., 70 Fifth Ave., New York, N. Y.

Fire Gun Mfg. Co., 115 Fourth Ave., New York, N. Y.

Fyr-Fyter Co., 221 Crane St., Dayton, O.

Johns-Manville Co., H. W., Madison Ave. & 41st St., New York, N. Y.

New York Brass Foundry Co., 102-04 Centre St., New York, N. Y.

Niagara—See Buffalo Chemical Fire Extinguisher Co.

Pyrene Mfg. Co., 17 E. 49th St., New York, N. Y.

U. S. Fire Extinguisher Co. (East Syracuse), Syracuse, N. Y. "Auto-Fyr." (See page 401.)

EXTINGUISHERS, Garage Fire

(For Garage and Shop Equipment)

Acme—See Rex-Harris Fire Appliance Co. of N. Y.

Allen Corp., 546 Greenwich St., New York, N.Y. "Pronto."

American-La France Fire Engine Co., Elmira, N. Y. "Keystone." "Paragon."

Atlas—See Northern Fire Apparatus Co.

Auto-Fyr—See U. S. Fire Extinguisher Co.

Badger Chemical Mfg. Co., 175 Reed St., Milwaukee, Wis. "Mitchell." "Wisconsin."

Badger Fire Extinguisher Co., 175 Portland St., Boston, Mass.

Badger & Sons Co., E. B., 68-69 Pitts St., Boston, Mass.

Buffalo Chemical Fire Extinguisher Co., 61-69 Carroll St., Buffalo, N. Y. "Ecuarusni."

Childs Co., O. J., 138 Liberty St., Utica, N. Y. "Utica."

Deluge—See Prospect Mfg. Co.

Diener Mfg. Co., George W., 400-20 Monticello Ave., Chicago, Ill.

Eclipse—See Haverhill Fire Appliance Co.

Ecuarusni—See Buffalo Chemical Fire Extinguisher Co.

Esco—See Emmons Specialty Co.

Ever-Ready—See Republic Chemical Fire Engine Co.

Fire Fighting Devices Co., 70 Fifth Ave., New York, N. Y.

Fire-Fly—See Northwestern Chemical Co.

Fire Gun Mfg. Co., 115 Fourth Ave., New York, N. Y.

Fire-Out Mfg. Co., 159 N. Second St., Philadelphia, Pa.

Firex Mfg. Co., 2039 S. Morgan St., Chicago, Ill.

Foamite Firefoam Co., 200 Fifth Ave., New York, N. Y.

Fyr-Fyter Co., 221 Crane St., Dayton, O.

Gammeter-Brodbeck Sales Co., 45 N. High St., Akron, O.

General Mfg. Co., 18th & Pine Sts., St. Louis, Mo.

Hall-Thompson Co., Dept. A., Hartford, Conn. "Wonder Worker." (See page 227.)

Harker Mfg. Co., 121-23 W. Third St., Cincinnati, O. "Queen."

Haverhill Fire Appliance Co., Haverhill Nat'l Bk. Bldg., Haverhill, Mass. "Eclipse."

J-M—See Johns-Manville Co.

J-M Success—See Johns-Manville Co.

Johns-Manville Co., H. W., Madison Ave. & 41st St., New York, N. Y. "Manville," "J-M Success," "J-M."

Keystone—See American-La France Fire Engine Co.

Knight & Thomas, 212 Summer St., Boston, Mass.

La May Mfg. Co., 30 N. Water St., Rochester, N. Y.

Manville—See Johns-Manville Co.

Miller Chemical Engine Co. of Ohio, 1415 W. Ninth St., Cleveland, O.

Minimax Co., 77 Beekman St., New York, N. Y.

Mitchell—See Badger Chemical Mfg. Co.

New York Brass Foundry Co., 102-04 Centre St., New York, N. Y.

Northern Fire Apparatus Co., 2422 University Ave., S. E., Minneapolis, Minn. "Atlas."

Northwestern Chemical Co., 785 State St., Marietta, O. "Fire-Fly." (See page 277.)

Nu-Ex Fire Appliance Co., Columbus, O.

Paragon—See American-La France Fire Engine Co.

Pronto—See Allen Corp.

Prospect Mfg. Co., Prospect, O. "Deluge."

Pyrene Mfg. Co., 17 E. 49th St., New York, N. Y.

Queen—See Harker Mfg. Co.

Racine Iron & Wire Works, Racine, Wis.

Regina—See Rex-Harris Fire Appliance Co of N Y.

Republic Chemical Fire Engine Co., Urbana, O. "Ever-Ready."

Rex-Harris Fire Appliance Co. of N. Y., 39 E. 19th St., New York, N Y. "Regina," "Acme," "Victor."

Safety Fire Extinguisher Co., 291 Seventh Ave., New York, N. Y.

Silvers Mfg. Co., Waterloo, Ia.

Standard Extinguisher Co., 24 Binford St. (S Boston), Boston, Mass.

Stempel Fire Extinguisher Co., 4250 N. 20th St., St. Louis, Mo.

U. S. Fire Extinguisher Co. (East Syracuse), Syracuse, N. Y. "Auto-Fyr," (See page 401.)

U. S.—See United Mfg. Co.

United Mfg. Co., Toledo, O. "U. S."

Utica—See Childs Co.

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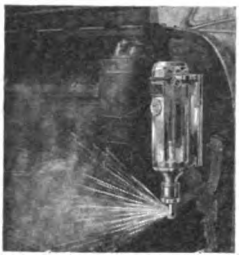

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Model 2	8.00
West of Rockies	6.50
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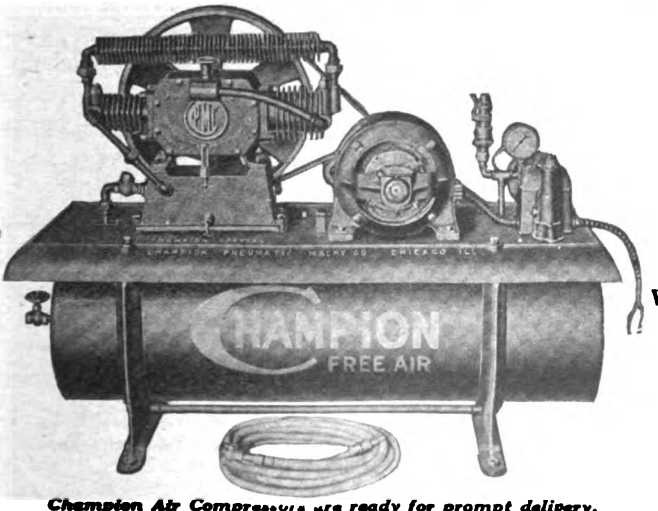

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EXTINGUISHERS, Garage, Fire (Continued)

Victor—See Rex-Harris Fire Appliance Co. of N. Y.
Wisconsin—See Badger Chemical Mfg. Co.
Wonder Worker—See Hall-Thompson Co.

EXTRACTORS, Broken Tap

Walton Co., 304 Pearl St., Hartford, Conn.

EXTRACTORS, Bushing, for Fords

Buffum Tool Co., Louisiana, Mo. (See page 529.)
Conant & Donelson Co., Conway, Mass. "Reliable."
Continental Auto Parts Co., 1807 E. 17th St., Columbus, Ind. (See page 419.)
Dearborn Equipment Co., Kalamazoo, Mich. (See page 403.)
Dyer Co., G. H., 155 Brookline St., Cambridge, Mass. "Jiffy."
J & B Mfg. Co., Pittsfield, Mass. (See page 739.)
Jiffy—See Dyer Co.
Mosco—See Motor Specialties Co.
Motor Specialties Co., Waltham, Mass. "Mosco."
O. K.—See West Haven Mfg. Co.
Reliable—See Conant & Donelson Co.
West Haven Mfg. Co., 22 Elm St. (West Haven), New Haven, Conn. "O. K."

EXTRACTORS, CAR—See Winches and Blocks

EXTRACTORS, Stud Bolt

Cleveland Twist Drill Co., Cleveland, O. "Ezy-out." (See page 369.)
Ezy-out—See Cleveland Twist Drill Co.
Sprung Mfg. Co., E., 3316 Northwestern Ave., Detroit, Mich.

EXTRACTORS, TAP — See Extractors, Broken Tap

EYE PROTECTORS—See Goggles, Mechanics' and Welders'

EYE SHIELDS—See Goggles

EYEBOLTS, AIRPLANE—See Bolts, Airplane Eye

EYELETS—See Grommets

EYES, SCREW—See Screw-Eyes

FABRIC, Aircraft

(See also Linen, Airplane)

Goodrich Co., B. F., S. Main St., Akron, O.
Pierce Mfg. Corp, Belleville Ave., New Bedford, Mass.
United States Tire Co., 1790 Broadway, New York, N. Y. "Usco."
Usco—See United States Tire Co.

FABRIC BELTS—See Belts, Endless Fabric

FABRIC CLEANERS—See Cleaners, Fabric

FABRIC CLUTCH DISCS—See Lining, Brake

FABRIC, Cotton Tire

Atlas Mfg. Co.—See Brander & Curry.
Bay State Cotton Corp.—See Turner Co.
Bibb Mfg. Co., Macon, Ga.
Brander & Curry, 30 E. 42d St., New York, N. Y. (Sole Distributors for Fitchburg Duck Mills, Fitchburg, Mass., and Atlas Mfg. Co., Bessemer City, N. C.)
Brighton Mills, Passaic, N. J.
Caldwell Co., R. J., 15 Park Row, New York, N. Y.
Catlin & Co., 345 Broadway, New York, N. Y.
Connecticut Mills Co., Danielson, Conn.
Fitchburg Duck Mills—See Brander & Curry.
Jenckes Spinning Co., Pawtucket, R. I.
Lane & Co., J. H., 334 Fourth Ave., New York, N. Y. (Sole Selling Agents for West Boylston Mfg. Co., East Hampton, Mass.)
Manhasset Mfg. Co., Turks Head Bldg., Providence, R. I.
Marlboro Cotton Mills, McColl, S. C.
Meyer Tire Duck Co., John H., 703 Frelinghuysen Ave., Newark, N. J.
Sears & Co., Wellington, 98 Franklin St., Boston, Mass.
Taylor, Armitage & Co., 120 Broadway, New York, N. Y.
Turner Co., J. Spencer, 56 Worth St., New York, N. Y. (Sole Distributors for Bay State Cotton Corp., Lowell, Mass.)

FABRIC DOOR PROTECTORS—See Protectors, Door

FABRIC FAN BELTS—See Belts, Endless Fabric

FABRIC SPEEDOMETER PINIONS—See Gears and Pinions, Speedometer

FABRIC UNIVERSAL JOINT DISCS—See Discs, Universal Joint

FABRICS, UPHOLSTERY AND TOP—See Cloth; also Broadcloth; also Silk; also Whipcord

FACINGS, BRAKE—See Lining, Brake

FACINGS, CLUTCH—See Lining, Brake; also Leather, Friction

FACINGS, FRICTION—See Frictions, Fibre

FACINGS, TRANSMISSION, FOR FORDS—See Lining, Brake

FAN BELT ADJUSTERS FOR FORDS—See Adjusters, Fan Belt

FAN BELT GUIDES—See Guides, Fan Belt

FAN BELTS—See Belts, Spiral Wire; also Belts, Endless Fabric; also Belting, Leather

FAN BELTS FOR FORDS—See Belts, Fan

FAN HORNS FOR FORDS—See Horns, Engine Operated

FAN PULLEYS—See Pulleys, Pressed Steel

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FANS, Radiator

(See also Radiators)

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern and Southern Distributors for Spencer Fans.) (See page 275.)

Automotive Parts Co., Massachusetts Ave. & Fan St., Indianapolis, Ind. "Hy-Duty." (See page 413.)

Buffalo Pressed Steel Co., Buffalo, N. Y. (See page 655.)

Cope-Swift Co., McDougall Ave. & Wight St., Detroit, Mich. (See page 619.)

Detroit Carrier & Mfg. Co., Detroit, Mich. (See page 1103.)

Halvorsen-Rossoe—See U. S. Products Corp.

Hardy Mfg. Co., Pendleton, Ind. (See page 403.)

Hotz Foundry & Mfg. Co., Wolf Ave., Fremont, O.

Hy-Duty—See Automotive Parts Co.

Kenigslow Mfg. Co., Otto E., 3501 Perkins Ave., Cleveland, O.

Oakes Co., Indianapolis, Ind. (See page 405.)

Pitter Fan Co., 208 S. LaSalle St., Chicago, Ill.

Service Products Corp., Indianapolis, Ind. (See page 407.)

Sparks-Withington Co., Jackson, Mich. "Sparton."

Sparton—See Sparks-Withington Co.

Spencer Metal Products Co., Spencer, O. (See page 766.)

Standard Tool & Mfg. Co., 512 E. Lafayette Blvd., Detroit, Mich.

U. S. Products Corp., 220 S. Michigan Ave., Chicago, Ill. "Halvorsen-Rossoe."

FANS, Radiator, for Fords

American Aero Co., So. Bend, Ind. "Juelson."

Ashland Products Co., 50 E. Ninth St., Ashland, O. "Wind Jammer." (See page 539.)

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern and Southern Distributors for Spencer Fans.) (See page 275.)

Automotive Parts Co., Massachusetts Ave. & Fan St., Indianapolis, Ind. "Hy-Duty." (See page 413.)

Dunham Co., Thos., Aurora, Ill. (See page 167.)

Hotz Foundry & Mfg. Co., Wolf Ave., Fremont, O.

Howe Lamp & Mfg. Co., 115-23 E. Ontario St., Chicago, Ill.

Hy-Duty—See Automotive Parts Co.

Juelson—See American Aero Co.

Spencer Metal Products Co., Spencer, O. (See page 766.)

Staff, J. Wadsworth, 122 S. Michigan Ave., Chicago, Ill. (Dealers.) (See pages 1177 and 1193.)

U. S. Products Corp., 220 S. Michigan Ave., Chicago, Ill. "Halvorsen-Rossoe."

Wind Jammer—See Ashland Products Co.

Wizzard Fan Co., 2316 Riverside Ave., Minneapolis, Minn.

FANS, Tractor Radiator

Automotive Parts Co., Massachusetts Ave. & Fan St., Indianapolis, Ind. "Hy-Duty." (See page 413.)

Hotz Foundry & Mfg. Co., Wolf Ave., Fremont, O.

Hy-Duty—See Automotive Parts Co.

Juelson—See Staff, J. Wadsworth.

Oakes Co., Indianapolis Ind. (See page 405.)

Service Products Corp., Indianapolis, Ind. (See page 407.)

U. S. Products Corp., 220 S. Michigan Ave., Chicago, Ill. "Halvorsen-Rossoe."

FARM LIGHTING PLANTS — See Plants, Farm Lighting

FASTENERS, Belt

Alligator—See Flexible Steel Lacing Co.

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. "Conn." (See page 275.)

Ballard-Sutcliffe Co., 537 Turk St., San Francisco, Cal. "W. W."

Blakes—See Greene, Tweed & Co.

Buettner Co., Charles H., Cincinnati, O.

Campbell—See Perkins-Campbell Co.

Clipper Belt Lacer Co., 1042 Front Ave., N. W., Grand Rapids, Mich.

Conn—See Asch & Co.

Crescent Belt Fastener Co., 331 Fourth Ave., New York, N. Y

Eagle—See Manufacturers' Belt Hook Co.

Flexible Steel Lacing Co., 4607-31 Lexington St., Chicago, Ill. "Alligator."

Greene, Tweed & Co., 109 Duane St., New York, N. Y. "Blakes." "Morans."

Lakewood—See McMonies, J. R.

Lakewood Fabric Belting & Mfg. Co., 1516 Highland Ave., Lakewood, O

McMonies, J. R., 1911 N. Dakota St., Spokane, Wash. "Lakewood."

Manufacturers' Belt Hook Co., 1321 W. Congress St., Chicago, Ill. "Eagle."

Morans—See Greene, Tweed & Co

Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. "Campbell." (See page 317.)

Powers Mfg. Co., Waterloo, Iowa. (See page 593.)

Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.

Universal Products Co., 908 W. Chicago Ave., Chicago, Ill.

W. W.—See Ballard-Sutcliffe Co.

FASTENERS, BOW—See Holders, Top Bow

FASTENERS, BOW, FOR FORDS — See Clamps, Top Bow

FASTENERS, BOX—See Catches, Spring

FASTENERS, CHAIN—See Fasteners, Tire Chain

FASTENERS, Curtain

Acme—See Scovill Mfg. Co.

Anzo Dot—See Carr Fastener Co.

Boston Fastener Co., 144-46 W. 37th St., New York, N. Y.

Brewer Tichener Corp., Cortland, N. Y. (See page 567.)

Brewster—See Cowles & Co.

Carr Fastener Co., Boston, Mass. "Durable Dot," "Common Sense," "Lift the Dot." "Veltex Dot," "Anzo Dot." (See page 475.)

Cinch Fastener Corp., 2335 W. Van Buren St., Chicago, Ill. (See page 619.)

Common Sense—See Carr Fastener Co.

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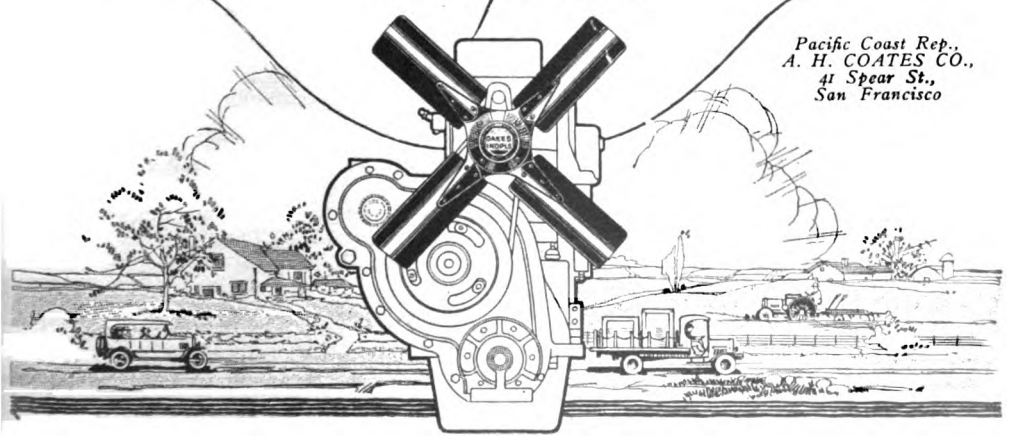

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FASTENERS, Curtain (Continued)

Cowles & Co., C., New Haven, Conn. "Brewster," "Ideal," "Perfect," "Success." (See page 651.)

Desoco—See Detroit Socket Co.

Detroit Socket Co., 2744 W. Jefferson Ave., Detroit, Mich. "Desoco."

Doerner & Co., 4127 32d St., Cincinnati, O. "Paragon."

Durable Dot—See Carr Fastener Co.

English & Mersick Co., New Haven, Conn. (See pages 623 and 783.)

Federal Equipment Co., Union St., Marietta, O.

Ideal—See Cowles & Co.

Jarvis Co., Charles L., Gildersleeve, Conn.

Jonah & George, Little's Ct., Merrimac, Mass.

Kentucky—See Neider Co.

Leader—See Neider Co.

Lift the dot—See Carr Fastener Co.

Lift the Dot—See Metal Stamping Co.

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y. "Perfecto," "Lift the Dot," "Standard," New Perfection."

Monarch Carriage Goods Co., Cincinnati, O. (See page 407.)

Murco—See Murphy Co.

Murphy Co., G. W. J., Carriage Ave., Amesbury, Mass. "Murco."

Neider Co., F. A., Augusta, Ky. "Peerless," "Leader," "Kentucky."

New Standard—See Metal Stamping Co.

North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn. "Perfection."

Novelty Mfg. Co., 125 Maple St., Waterbury, Conn. "Stronghold."

O'Brien Mfg. Co., Joseph F., 391 Broadway, New York, N. Y.

Paragon—See Doerner & Co.

Peerless—See Neider Co.

Perfect—See Cowles & Co.

Perfection—See North & Judd Mfg. Co.

Perfecto—See Metal Stamping Co.

Reliable—See Smith & Co.

Roehm & Davison, 353 W. Woodbridge St., Detroit, Mich.

Seovill Mfg. Co., Waterbury, Conn. "Acme." (See page 845.)

Shaw Mfg. Co., 126 Massachusetts Ave., Boston, Mass. (See page 1133.)

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich. "Reliable."

Soss Mfg. Co., Grand Ave., & Bergen St., Brooklyn, N. Y.

Standard—See Metal Stamping Co.

Strong Co., M. H., 168 South Ave., Rochester, N. Y.

Stronghold—See Novelty Mfg. Co.

Success—See Cowles & Co.

Taylor Co., H. D., 99-115 Oak St., Buffalo, N. Y.

United States Fastener Co., 95 Milk St., Boston, Mass.

Veltex Dot—See Carr Fastener Co.

Wilcox, Crittenden & Co., 2 S. Main St., Middletown, Conn.

Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.

English & Mersick Co., New Haven, Conn. (See page 623 and 783.)

Enterprise Brass & Plating Co., Sixth & Baymiller Sts., Cincinnati, O.

Evertight—See Gemco Mfg. Co.

Ferro Stamping & Mfg. Co., Detroit, Mich. (See page 583.)

Ford-Clark Co., 3125 Perkins Ave., Cleveland, Ohio.

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. "Evertight." (See pages 174 and 175.)

Graham & Co., James, 293 Wooster St., New Haven, Conn.

Greer, Fredric, 525 W. Van Buren St., Chicago, Ill.

Holt-On—See Holton Hood Clip Co.

Holton Hood Clip Co., 65 Shelby St., Detroit, Mich. "Holt-On." (See page 403.)

Ideal Brass Works, 560 N. Elder Ave., Indianapolis, Ind.

Imperial Brass Mfg. Co., 1224 W. Harrison St., Chicago, Ill. (See page 177.)

Keeler Brass Co., 251-71 Godfrey Ave., Grand Rapids, Mich.

McKinney Mfg. Co., Liverpool & Metropolitan Sts., Pittsburgh, Pa.

Medina Stamping & Machine Co., 317 Main St., Medina, N. Y.

Meyer Scale & Hardware Co., 328 Adams St., Newark, N. J.

Monarch Carriage Goods Co., Cincinnati, O. (See page 407.)

North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn. "Anchor."

Out-O-Sight—See White Products Co.

Pfau Mfg. Co., Cincinnati, O.

Polson Mfg. Co., 1750 Main St., Buffalo, N. Y.

Rostand Mfg. Co., Milford, Conn.

Sergeant Mfg. Co., New & Summit Sts., Newark, N. J.

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.

Specialty Products Co., 494 Mulberry St., Newark, N. J.

Stewart Mfg. Co., Inc., Oakland, Cal. (See page 1119.)

United Motors Co., 675 North St., N. W., Grand Rapids, Mich.

Wagner Mfg. Co., E. R., North Milwaukee, Wis. (See page 905.)

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

White Products Co., 2204 S. Michigan Ave., Chicago, Ill. "Out-O-Sight."

FASTENERS, GATE—See Fasteners, Truck Body Gate

FASTENERS, HOOD, FOR FORDS—See Clamps, Hood

FASTENERS, STORAGE BATTERY HOLDING DOWN—See Clamps, Storage Battery Holding Down

FASTENERS, Hood

Aetna Brass & Bronze Co., 1631-35 E. 55th St., Cleveland, O.

Anchor—See North & Judd Mfg. Co.

Attwood Brass Works, Grand Rapids, Mich. (See page 1195.)

Bassick Co., Bridgeport, Conn. (See page 333.)

Columbus Brass Co., 540 Dublin Ave., Columbus, O.

FASTENERS, Tire Chain

Clamert Mfg. Co., Third & Ross Sts., Pittsburgh, Pa.

Cross Chain Fastener Co., Rose Bldg., Cleveland, O. "Q. D."

Exytite Sales Co., 58-62 Congress Ave., New Haven, Conn.

Faus, Jr., Jacob, 1917 12th St., Boulder, Colo.

Frey, 497 Ellicott St., Buffalo, N. Y.

Q. D.—See Cross Chain Fastener Co.

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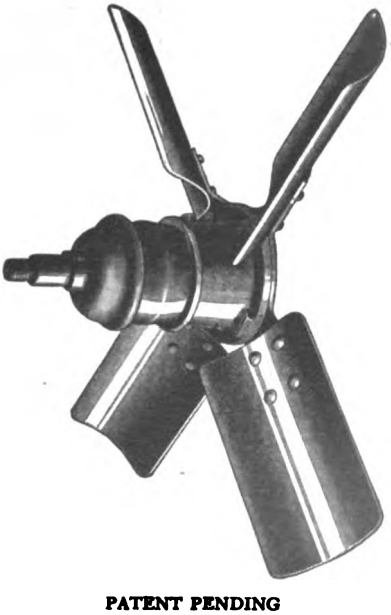

PATENT PENDING

SERVICE PRODUCTS CORP.
Indianapolis, Indiana

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FASTENERS, TRUCK BODY GATE

Grip-Lok—See Reese Mfg. Co.

Reese Mfg. Co., 46 Bagg St., Detroit, Mich. "Grip-Lok."

FASTENERS, Ventilating Hood, for Fords

V Air Valve & Mfg. Co., 1648 Tremont St., Denver, Colo.

FEED SYSTEMS, GASOLINE—See Systems, Gasoline Feed; also Tanks, Vacuum; also Regulators, Tank Pressure

FEEDERS, WATER—See Moisteners, Air

FELLOES, WOOD—See Rims, Wood

FELT GASKETS—See Washers, Felt

FELT GASKETS FOR FORDS—See Gaskets, Felt

FELT LUBRICATOR WICKING — See Wicking, Felt Lubricator

FELT, Sheet

(For Felt Washers or Gaskets—See Washers, Felt)

Advance Felt & Cutting Co., 315E S. Jefferson St., Chicago, Ill. (See page 411.)

American Felt Co., 100 Summer St., Boston, Mass. (See page 411.)

Bacon Felt Co., Winchester, Mass.

Booth Felt Co., 100 Summer St., Brooklyn, N. Y. (See pages 409 and 410.)

Commonwealth Felt Co., 76 Summer St., Boston, Mass.

Eastern Felt Co., Canal St., Winchester, Mass.

Jenks & Muir Mfg. Co., 6441 Hastings St., Detroit, Mich.

Lowell Felt Co., 48 Warren St., Lowell, Mass.

Rhocom—See Rhodes & Co.

Rhodes & Co., James H., 513 W. Austin Ave., Chicago, Ill. "Rhocom."

Stroock & Co., S., 11-13 E. 26th St., New York, N. Y.

Western Felt Works, 4115-33 Ogden Ave., Chicago, Ill. (See page 1055.)

FELT TESTING INSTRUMENTS—See Instruments, Rubber and Felt Testing

FELT, Upholstery

(For use in place of hair or moss; for Hair—See Hair Upholstery; for Moss—See Moss, Upholstery)

Detroit Felt Co., 3297 Hubbard St., Detroit, Mich.

Newark Hair Felt Co., Lansdale, Pa.

Snell Co., Charles W., 321 S. Jefferson St., Chicago, Ill.

Textile By-Products Corp., 149 Church St., New York, N. Y.

FELT WASHERS—See Washers, Felt

FELT WASHERS FOR FORDS—See Gaskets, Felt

FENDER BRACES FOR FORDS—See Braces, Mud Guard

FENDER CLAMPS FOR FORDS—See Braces, Mud Guard

FENDER COVERS—See Covers, Fender

FENDER PROTECTORS—See Covers, Fender

FENDER ROLLING MACHINES—See Machines, Fender Rolling

FENDER STRAIGHTENING TOOLS — See Tools, Fender Straightening

FENDER WIRING MACHINES—See Machines, Fender Wiring

FENDERS, Automobile

(Safety Devices for front of car; see also Bumpers, Automobile)

Burns Co., W. P., 109 N. Dearborn St., Chicago, Ill.

Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representative.) (See page 345.)

Hersh & Bro., 645 Mill St., Allentown, Pa.

International Sav-A-Life Fender Co., Guardian Bldg., Cleveland, O.

Jackson Metal Products Co., 601-15 Liberty St., Jackson, Mich.

Linquist, Wm. A., 901-03 Marquette Ave., Minneapolis, Minn.

Mitchell & Son, G. F., 6501 Cedar Ave., Cleveland, O.

Pandolfo Mfg. Co., St. Cloud, Minn. (See page 157.)

Safety First Appliance Co., Woodward Bldg., Washington, D. C.

Western Metal Specialty Co., 1919 St. Ave., Milwaukee, Wis.

FENDERS or MUD GUARDS, Leather

McKinnon Dash Co., Buffalo, N. Y. (See page 831.)

FENDERS or MUD GUARDS, Metal

A. B. & B. Sheet Metal Works, 8300-02 Fond du Lac Ave., Milwaukee, Wis.

Ajax Auto & Aero Sheet Metal Co., 419 W. 47th St., New York, N. Y. (See page 803.)

Auto Radiator Mfg. Co., 1712 S. Michigan Ave., Chicago, Ill.

Automotive Sheet Metal Co., Factory St. & Grand Trunk R. R., Kalamazoo, Mich. "Maco."

Briskin Mfg. Co., 215 S. Hoyne Ave., Chicago, Ill.

Brummeler-Ruggles Metal Products Co., 1215 Ionia Ave., S. W., Grand Rapids, Mich.

Brummeler's Sons Co., Wm., 413 Ionia Ave., S. W., Grand Rapids, Mich. "Brusco."

Brusco—See Brummeler's Sons Co.

Bull Dog—See Fulton Co.

Bush Mfg. Co., Hartford, Conn. (See page 797.)

Chicago Mfg. Co., 1458-64 Michigan Ave., Chicago, Ill.

Clayton & Lambert Mfg. Co., Detroit, Mich. (See page 981.)

Clayton's Sons, Frank B., 1227-33 N. 11th St., Philadelphia, Pa.

Columbus Auto Brass Co., Columbus, O. (See page 1139.)

Cornwall Mfg. Co., Cleveland, O. (See page 951.)

Detroit Auto Specialty Corp., 6209 Greenwood Ave., Detroit, Mich.

Fostoria Pressed Steel Co., Fostoria, O. (See page 993.)

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114 East 13th Street, New York
325 So. Market Street, Chicago

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FENDERS or MUD GUARDS, Metal (Continued)

Hale-Kilburn Corp., 1800 Lehigh Ave., Philadelphia, Pa.

Hayes Mfg. Co., 4525 Maybury Grand Ave., Detroit, Mich.

Kells Mfg. Co., W. J., 521-25 W. 45th St., New York, N. Y.

Kirk & Blum, 2846 Spring Grove Ave., Cincinnati, O.

Kleber-Sherman Mfg. Co., 2807 S. Michigan Ave., Chicago, Ill.

Lawco—See Lawson Co.

Lawson Co., F. H., Dept D., Cincinnati, O. "Lawco." (See page 327.)

Lima Sheet Metal Products Co., 308 E. Wayne St., Lima, O.

Maco—See Automotive Sheet Metal Co.

Martin Metal Mfg. Co., Wichita, Kans.

Metal Auto Parts Co., Chase & Henry Sts., Indianapolis, Ind.

Michigan Crown Fender Co., N. Huron St., Ypsilanti, Mich.

Michigan Stamping Co., 3171 Bellevue Ave., Detroit, Mich.

Moline Pressed Steel Co., Fifth St., East Moline, Ill.

Motors Metal Mfg. Co., 5936 Milford Ave., Detroit, Mich.

Mullins Body Corp., 182 Franklin Ave., Salem, O.

Murray Auto Parts Mfg. Co., Atlanta, Ga.

Murray Mfg. Co., J. W., 571 Clay Ave., Detroit, Mich.

Paragon Auto-Parts Mfg. Co., 506 W. 53d St., New York, N. Y.

Peacock Radiator Guard Co., 423 E. Jefferson St., Detroit, Mich.

Perfex Radiator Co., Racine, Wis.

Phillips & Co., H., 904-10 Evans St., Cincinnati, O.

S. J.—See Shotwell-Johnson.

Saginaw Sheet Metal Works, 2060 Genesee Ave., Saginaw, Mich.

Sargeant Mfg. Co., New & Summit Sts., Newark, N. J.

Shotwell-Johnson, Minneapolis, Minn. "S.-J." (See page 1115.)

Standard Auto Radiator Co., 244 W. 53d St., New York, N. Y.

Stewart Iron Works Co., Cincinnati, O.

Thomas Co., W. H.—See Fulton Co.

Thompson Co., Robert, 1015 S. Grand Ave., Los Angeles, Cal. (See page 1119.)

Todd Mfg. Co., 12-14 N. 12th St., Minneapolis, Minn.

Universal Metal Parts Mfg. Co., 602-04 W. 52d St., New York, N. Y.

Western Radiator & Fender Mfg. Co., 1430 Bush St., San Francisco, Cal.

Wilson & Bowen, 1318 S. Main St., Los Angeles, Cal.

York Corrugating Co., York, Pa.

FENDERS or MUD GUARDS, Wood

Dann Bros. & Co., 84 Franklin St., New Haven, Conn.

FENDERS or MUD GUARDS, for Fords

(Including both standard and special crown fenders)

A. B. & B. Sheet Metal Works, 3300-02 Fond du Lac Ave., Milwaukee, Wis.

Biltwell Accessories Co., 401 E. 23rd St., New York, N. Y.

Black Crown—See Murray Auto Parts Mfg. Co.

Columbus Auto Brass Co., Columbus, O. (See page 1139.)

Corcoran Mfg. Co., Section & Foraker Aves., (Norwood), Cincinnati, O. "Peerless."

Hayes Mfg. Co., 4525 Maybury Grand Ave., Detroit, Mich.

Kleber-Sherman Mfg. Co., 2807 S. Michigan Ave., Chicago, Ill.

Lawco—See Lawson Co.

Lawson Co., F. H., Dept. D., Cincinnati, O. (See page 327.)

Motors Metal Mfg. Co., 5936 Milford Ave., Detroit, Mich. "Superior."

Murray Auto Parts Mfg. Co., Atlanta, Ga.

Peacock Radiator Guard Co., 423 E. Jefferson St., Detroit, Mich.

Peerless—See Corcoran Mfg. Co.

Saginaw Sheet Metal Works, 2060 Genesee Ave., Saginaw, Mich.

Superior—See Motors Metal Mfg. Co.

Superior Lamp Mfg. Co., 148-50 W. 52d St., New York, N. Y.

York Corrugating Co., York, Pa.

FENDERS or MUD GUARDS, Tractor

Brummeler-Ruggles Metal Products Co., 1215 Ionia Ave., S. W., Grand Rapids, Mich.

Bull Dog—See Fulton Co.

Champion Milk Cooler Co., 52-60 Owego St., Cortland, N. Y.

Chicago Mfg. Co., 1458-64 Michigan Ave., Chicago, Ill.

Corcoran Mfg. Co., Section & Foraker Aves., (Norwood), Cincinnati, O.

Derby Coppersmithing & Sheet Metal Contracting Co., Derby, Conn.

Fulton Co., 75th & National Aves., Milwaukee, Wis. (Sole Distributors for W. H. Thomas, Spencer, Ia. "Bull Dog.") (See page 1033.)

Hersh & Bro., 645 Mill St., Allentown, Pa.

Kells Mfg. Co., W. J., 521-25 W. 45th St., New York, N. Y.

Kleber-Sherman Mfg. Co., 2807 S. Michigan Ave., Chicago, Ill.

Made-O-Metal—See Pandolfo Mfg. Co.

Moore Mfg. Co., Concrete & Water Sts., Waterloo, Iowa.

Otwell Tractor Equipment Co., 6538 Livernois Ave., Detroit, Mich.

Pandolfo Mfg. Co., St. Cloud, Minn. "Made-O-Metal." (See page 157.)

S-W-S Co., Minneapolis, Minn. (See page 467.)

Thomas, W. H.—See Fulton Co.

Weis Mfg. Co., Henry, Atchison, Kans. "Weisteel."

Weisteel—See Weis Mfg. Co.

York Corrugating Co., York, Pa.

FENDERS or GUARDS, Truck Radiator

All-Metal Products Corp., 909 Greenwood Ave., Detroit, Mich.

Atlantic Welding Works, 30th & Callowhill Sts., Philadelphia, Pa. "Armweld."

Armweld—See Atlantic Welding Works.

Cochran Piston Corp., Detroit, Mich. (See page 735.)

Fundamental Corp., 270 Union Ave., Brooklyn, N. Y. "Warman." (See page 1007.)

Hotchkiss Metal Form Co., 16 Jarvis St., Binghamton, N. Y. (See page 345.)

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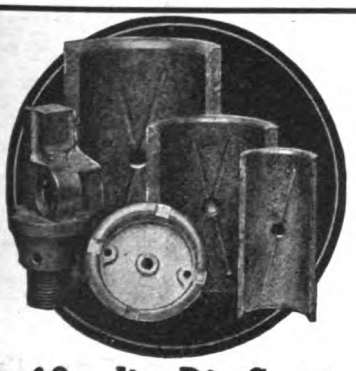
Brooklyn, N. Y.



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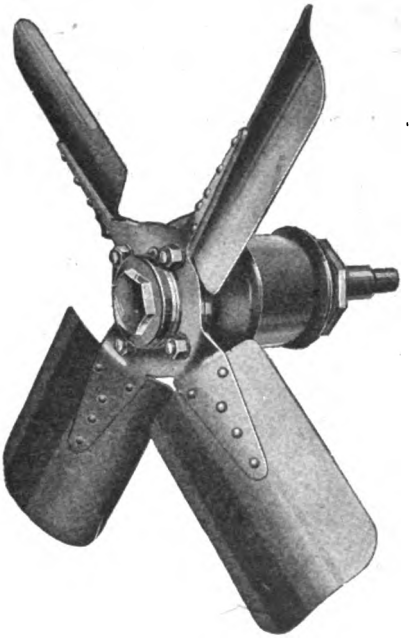

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FENDERS or GUARDS, Truck Radiator (Continued)

Irving Iron Works Co., Long Island City, N. Y.
Mansfield Steel Corp., 288 E. Milwaukee Ave., Detroit, Mich.
Mason & Co., F. C., St. Johns, Mich.
Sheet Steel Products Co., Bryan, O.
Warman—See Fundamental Corp.

FENDERS or GUARDS, Truck Radiator for Fords

A. B. & B. Sheet Metal Works, 3300-02 Fond du Lac Ave., Milwaukee, Wis.
Lawco—See Lawson Co.
Lawson Co., F. H., Dept. D, Cincinnati, O. "Lawco." (See page 327.)

FERRO MOLYBDENUM—See Molybdenum, Ferro

FERRULES, AIRPLANE WIRE—See Thimbles and Ferrules, Wire

FIBRE CLEATS—See Cleats, Fibre

FIBRE GEARS—See Gears, Rawhide and Fibre

FIBRE, Hard

(Sheet, Rod and Tube)

American Vulcanized Fibre Co., 573 Equitable Bldg., Wilmington, Del. "Vul-Cot." (See page 415.)
Brandywine Fibre Products Co., 1406 Walnut St., Wilmington, Del. (See page 415.)
Continental Fibre Co., Newark, Del. (See page 263.)
Delaware Hard Fibre Co., Wilmington, Del. (See page 601.)
Diamond F—See Diamond State Fibre Co.
Diamond State Fibre Co., Bridgeport, Pa. "Diamond F."
Fibre Specialty Mfg. Co., Kennett Sq., Pa.
Keystone Fibre Co., Yorklyn, Del.
National Fibre & Insulation Co., Box 281, Yorklyn, Del. "S-S." (See page 415.)
S-S—See National Fibre & Insulation Co.
Spaulding & Sons Co., J., Wheeler St., Tonawanda, N. Y.
Standard Fibre Co., 11-15 Miller St., Somerville, Mass.
Vul-Cot—See American Vulcanized Fibre Co.
Wilmington Fibre Specialty Co., Wilmington, Del. (See page 249.)

FIBRE PINIONS—See Gears and Pinions, Rawhide

FIBRE TUBE—See Fibre, Hard

FIELD COIL WINDINGS—See Windings, Starter and Ignition

FIFTH WHEELS—See Wheels, Fifth

FILES and RASPS

Akron File Co., 1008 Grant St., Akron, O.
American Swiss File & Tool Co., 24 John St., New York, N. Y.
Barnett Co., G. & H., 1078 Franklin Ave., Philadelphia, Pa. "Black Diamond."
Black Diamond—See Barnett Co.
Chatterton File Works, 38 Randall St., Providence, R. I.
Chelsea File Works, Sherman St., Norwich, Conn.
Colonial File Co., 167-70 Tenean St., Neponset, Mass. "Puritan."
Delta File Works, 3227 Frankford Ave., Philadelphia, Pa.
Disston & Sons, H., Tacony, Philadelphia, Pa
Gem City File Works Co., 1120-24 Broadway, Quincy, Ill.
Gold Medal File Co., 29th St. & Allegheny Ave., Philadelphia, Pa.
Graves File Co., 67 N. J. R. R. Ave., Newark, N. J.
Grobet—See Montgomery & Co.
Hayes File Co., 1980 Franklin St., Detroit, Mich.
Heller Bros Co., 365 Mt. Prospect Ave., Newark, N. J.
Johnson & Bro., 603 Summer St., Newark, N. J. "Reliance."
McCaffrey File Co., Fifth & Berks Sts., Philadelphia, Pa.
Madden & Morrison File Co., 76-78 Dolsen Ave., Middletown, N. Y.
Montgomery & Co., 105-07 Fulton St., New York, N. Y. (Importers.) "Grobet."
Murcott & Campbell, 296-300 Union Ave., Brooklyn, N. Y.
Nicholson File Co., 23 Acorn St., Providence, R. I. "Superior," "Spark."
Puritan—See Colonial File Co.
Reliance—See Johnson & Bro.
Rex File & Saw Co., New Comerstown, O.
Reynolds Bros., 180 N. Water St., Columbus, O.
Simonds Mfg. Co., North St., Fitchburg, Mass.
Spark—See Nicholson File Co.
Superior—See Nicholson File Co.
Trojan—See Troy File Works.
Troy File Works, Congress St., Troy, N. Y. "Trojan."
Westphal File Co., 467 31st St., Milwaukee, Wis.
Whitaker Mfg. Co., Chicago, Ill. (See page 1177.)

FILLERS, Aircraft Wood

Valentine & Co., 456 Fourth Ave., New York, N. Y. "Valspar."
Valspar—See Valentine & Co.

FILLERS, Automatic Storage Battery

(Tank and special valves to attach to car for supplying water to the battery automatically; for Storage Battery Syringes—See Hydrometers)

Genco—See General Scientific Equipment Co.
General Scientific Equipment Co. (North Philadelphia), Philadelphia, Pa. "Genco."
Hunter Corp., John, Fulton, N. Y. "20th Century."
Luthy Hydrometer Co., 97 Woodward Ave., Detroit, Mich.
Reliable Mfg. Co., 2819 Prospect Ave., Cleveland, O.
Shontz Co., H. B., 157 W. 54th St., New York, N. Y. (New York, New Jersey and Connecticut Distributors for "20th Century" Fillers. (See page 733.)
20th Century—See Hunter Corp., John.

FILLERS, BATTERY—See Fillers, Automatic Storage Battery

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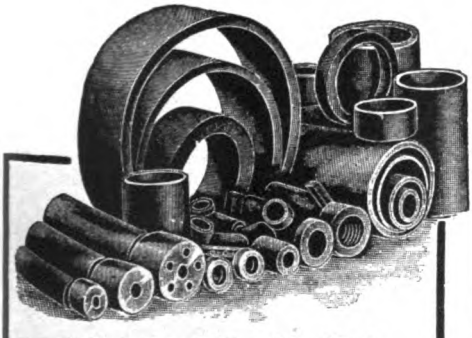

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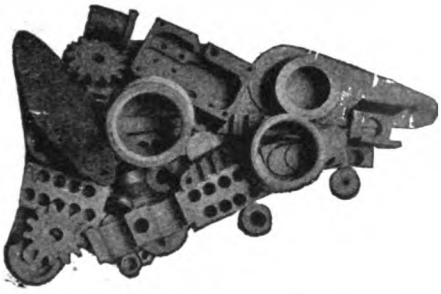

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You can purchase *Vul-Cot* Fibre in sheets, rods and tubes. We will also machine it to your specifications.

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FILLERS, GREASE GUN—See Leaders, Grease Gun

FILLERS, Paint

Acme White Lead & Color Works, 8250 St. Aubin Ave., Detroit, Mich.
Berry Bros., 211 Lieb St., Detroit, Mich. "Lionoil."
Bradley & Vrooman Co., 2629 Dearborn St., Chicago, Ill. "C. Q. P."
Bridgeport Wood Finishing Co., New Milford, Conn. "Wheelers."
C. Q. P.—See Bradley & Vrooman Co.
Celox.—See Valentine & Co.
Chase, Roberts & Co., Fifth St. & West Ave., Long Island City, N. Y.
Chicago Varnish Co., 2100 Elston Ave., Chicago, Ill. "Chi-Var-Co."
Chi-Var-Co.—See Chicago Varnish Co.
Detroit White Lead Works, 1960 Milwaukee Ave., E., Detroit, Mich. "Rogers"
Dibble Color Co., 445 Larned St., W., Detroit, Mich.
Ditzler Color Co., 40 W. Baltimore Ave., Detroit, Mich.
Esco—See Smith & Co.
Flint Varnish & Color Works, Hamilton & St. Johns Sts., Flint, Mich.
Flood & Conklin Co., 136 Chestnut St., Newark, N. J.
Forest City Paint & Varnish Co., 3334 Lakeside Ave., Cleveland, O.
Glidden Co., W. Madison Ave. & L. S. & M. S. Ry., Cleveland, O.
Graves Co., N. Z., 22-26 S. Third St., Philadelphia, Pa.
Hildreth Varnish Co., 90 West St., New York, N. Y.
Johnston Paint Co., R. F., Pearl & Main Sts., Cincinnati, O. "Krakno."
Keystone Paint & Filler Co., Muncy, Pa.
Krakno—See Johnston Paint Co.
Lionoil—See Berry Bros.
Masury & Son, John W., 44-50 Jay St., Brooklyn, N. Y.
Moser Co., Chas., 215-27 E. Ninth St., Cincinnati, O.
Murphy Varnish Co., Chestnut & McWhorter Sts., Newark, N. J.
Nice, Eugene E., 268-74 S. Second St., Philadelphia, Pa.
O'Brien Varnish Co., Johnson & Washington Sts., South Bend, Ind.
Phoenix Paint & Varnish Co., 124 Market St., Philadelphia, Pa.
Reno Bros. Paint Co., Pulaski, Pa.
Rogers—See Detroit White Lead Works.
St. Louis Surfacer & Paint Co., Arlington Ave. & Terminal Belt Line, St. Louis, Mo.
Schrack & Co., 152 N. Fourth St., Philadelphia, Pa.
Smith & Co., Edward, Sixth St. & West Ave., Long Island City, N. Y. "Esco."
Valentine & Co., 456 Fourth Ave., New York, N. Y. "Celox."
Wheelers—See Bridgeport Wood Finishing Co.

FILLERS, TIRE — See Compounds, Tire Filling

FILLERS, Tire Bead

(A ring applied on a quick detachable type of tire to permit applying on a straight side rim)

Rubber City Clearing House Co., 1133-35 S. High St., Akron, O.

FILLERS, WOOD—See Fillers, Aircraft Wood

FILLING COMPOUNDS—See Compounds, Tire Filling

FILLING TUBES—See Tubes, Non-Explosive Tank Filling

FILTERS, GASOLINE—See Strainers or Separators, Gasoline

FILTERS, Oil

Bousman Mfg. Co., 1157 Plainfield Ave., N. E., Grand Rapids, Mich.

FILTERS AND CLARIFIERS, CENTRIFUGAL—See Separators, Oil

FINANCIAL BROKERS—See Brokers, Financial

FINISHING WASHERS—See Washers, Finishing

FINS, RADIATOR—See Discs, Radiator

FIRE EXTINGUISHERS—See Extinguishers, Garage Fire; also Extinguishers, Automobile Fire

FIRE POTS—See Furnaces, Soldering

FIRE TUBE BOILERS—See Boilers

FIRST AID CABINETS—See Cases, Medical Emergency

FIRST AID CASES—See Cases, Medical Emergency

FIRST AID KITS—See Cases, Medical Emergency

FITTINGS, Car Lowering, for Fords

Domeloo—See Dominick & Co.
Dominick & Co., Wm., 2220 Indiana Ave., Chicago, Ill. "Domeloo."
Haywood Tire & Equipment Co., 1230 N. Capitol Ave., Indianapolis, Ind.
Ford Speed-Power Equipment Mfrs., 250 W. 54th St., New York, N. Y.
Speedway Engineering Co., 910 N. Illinois St., Indianapolis, Ind. (See page 1133.)

FITTINGS, COMPRESSION—See Unions, Tubing

FITTINGS, CURTAIN OPENING — See Openers, Curtain

FITTINGS, Pipe

(For Tubing or Brazing Fittings—See Tubing Unions)

Belfield Co., H., 435 N. Broad St., Philadelphia, Pa.
Commonwealth Brass Corp., Detroit, Mich. (See page 1139.)
Crane Co., 836 S. Michigan Ave., Chicago, Ill.
Dalton-Ingersoll Mfg. Co., 171-75 High St., Boston, Mass.
Detroit Brass & Malleable Works, Holden & Greenwood Aves., Detroit, Mich.
Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)
Jarecki Mfg. Co., 149 E. Ninth St., Erie, Pa.

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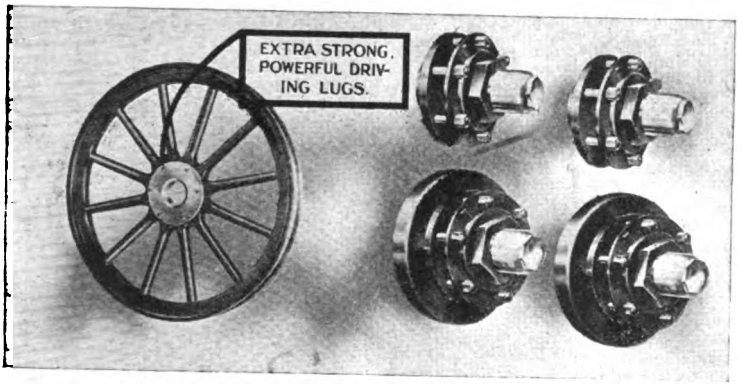

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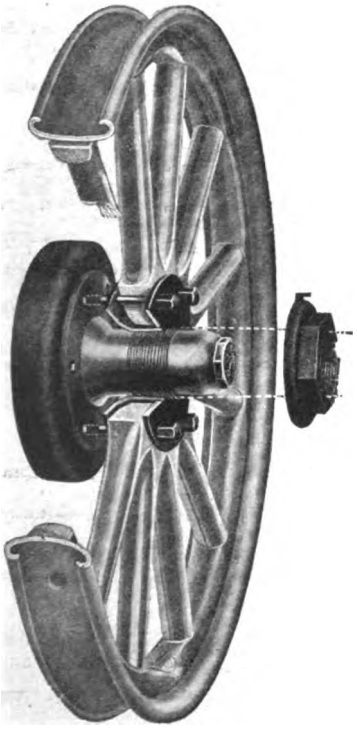

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FITTINGS, Pipe (Continued)

Keeler Brass Co., 251-71 Godfrey Ave., Grand Rapids, Mich.

Kelly & Jones Co., Greensburg, Pa.

Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O.

McDonald Mfg. Co., A. Y., 12th & Pine Sts., Dubuque, Ia.

McNab & Harlin Mfg. Co., 55 John St., New York, N. Y.

McRae & Roberts Co., 100-16 S. Campbell Ave., Detroit, Mich.

Michigan Lubricator Co., Detroit, Mich. (See page 259.)

Pittsburg Valve & Fittings Co., Barberton, O.

Powhatan Brass & Iron Works, Ransom, W. Va.

Richardson-Phenix Co., 122-28 Reservoir Ave., Milwaukee, Wis.

Roberts Brass Mfg. Co., 5401 W. Fort St., Detroit, Mich.

Sherman Mfg. Co., H. B., Battle Creek, Mich. (See page 293.)

Stoddard Union Co., Grand St., Lockport, N. Y.

Ware Coupling & Nipple Co., Ware, Mass.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

FITTINGS, SOLDERLESS — See Unions, Tubing

FITTINGS, TUBING—See Unions, Tubing

FITTINGS, UNDERSLUNG—See Fittings, Car Lowering

FITTINGS and FIXTURES, Top

(See also Bows, Top; also Fasteners, Curtain; also Irons, Slat; also Irons, Top; also Rests, Bow; also Separators, Bow; also Sockets, Bow; also Straps, Top)

Amesbury Brass & Foundry Co., Amesbury, Mass.

Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.

English & Mersick Co., New Haven, Conn. (See pages 623 and 783.)

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

Monarch Carriage Goods Co., Cincinnati, O. (See page 407.)

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

FIXTURES—See Dies, Jigs, Tools and Fixtures.

FIXTURES, TOP—See Fittings and Fixtures, Top

FIXTURES, UNDERSLUNG FOR FORDS—See Fittings, Car Lowering

FLAG HOLDERS—See Holders, Flag, Pennant and Emblem

FLAGS, PENNANTS and EMBLEMS

(See also Ornaments, Radiator; for Flag Holders—See Holders, Flag)

American Art Production Co., 58-60 Walton St., Brooklyn, N. Y.

Biltwell Accessories Co., 401 E. 23rd St., New York, N. Y.

Bloom Bros. Co., 422-30 First Ave., N., Minneapolis, Minn.

Freydberg, G. H. & B., 160 Fifth Ave., New York, N. Y.

Kosmos-Art Co., 120 E. Sixth St., Cincinnati, O.

Luxemoor Co., 114 E. 13th St., New York, N. Y.

Massari Co., H. W., 200 S. State St., Chicago, Ill.

Meiler & Son, J. B., Dayton, O.

Orcutt & Co., J. C., 134 S. 13th St., Lincoln, Neb.

Staats & Co., E. G., Mt. Pleasant, Ia.

FLANGE COUPLINGS, MOTOR BOAT—See Couplings, Motor Boat Flange

FLANGES, AIRCRAFT PROPELLER HUB—See Hubs, Aircraft Propeller

FLANGES, Pressed Steel Hub

(For Forged or Cast Flanges—See Forgings; also, Castings)

Bossert Corp., Utica, N. Y. (See page 897.)

Brewer Tichener Corp., Cortland, N. Y. (See page 567.)

Buffalo Pressed Steel Co., Buffalo, N. Y. (See page 655.)

Crosby Co., Buffalo, N. Y. (See page 899.)

Federal Pressed Steel Co., 52 Keefe Ave., Milwaukee, Wis. (See page 901.)

Hydraulic Pressed Steel Co. of The Hydraulic Steel Co., Cleveland, O. (See page 439.)

Kelsey Wheel Co., Detroit, Mich. (See page 1063.)

Konigslow Mfg. Co., Otto E., 3501 Perkins Ave., Cleveland, O.

Powell Pressed Steel Co., Hubbard, O. (See page 903.)

Pressed Steel Co., Luzerne St., Wilkes-Barre, Pa. (See page 903.)

Savage Arms Corp., Sharon, Pa.

Worcester Pressed Steel Co., Worcester, Mass. (See page 919.)

Worcester Stamped Metal Co., Worcester, Mass. (See page 1019.)

FLASH BOILERS—See Boilers

FLASHLIGHTS, ELECTRIC—See Lights, Electric Flash

FLAT BELTS—See Belting, Leather

FLEXIBLE CONDUIT—See Conduit, Flexible Car Wiring

FLEXIBLE CONTROL CABLE—See Cable, Flexible Control

FLEXIBLE COUPLINGS, MOTOR BOAT—See Couplings, Motor Boat Flexible

FLEXIBLE LEATHER MOULDING—See Moulding, Flexible Leather

FLEXIBLE METAL HOSE—See Tubing, Flexible Metallic; also Hose, Metal Lined

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FLEXIBLE SHAFT COUPLINGS — See Couplings, Flexible Shaft

FLEXIBLE SHAFTS—See Shafting, Flexible

FLEXIBLE TUBING—See Tubing, Flexible

FLOATS, Cork

(For Carburetors, Oil and Gasoline Gages, etc.; see also Floats, Metal)

Armstrong Cork Co., 124 23rd St., Pittsburgh, Pa. (See page 449.)

Diamond Cork Co., 59 Pearl St., New York, N. Y.

Mundet & Son, L., King, Ferris & Sullivan Sts., Brooklyn, N. Y.

Paddock Cork Co., 1209-17 DeKalb Ave., Brooklyn, N. Y. (See page 301.)

Spanish-American Cork & Specialty Co., (Westport), Baltimore, Md.

FLOATS, Metal

(For Carburetors, Oil and Gasoline Gages, etc.; see also Floats, Cork)

Armstrong Cork Co., 124 23rd St., Pittsburgh, Pa. (See page 449.)

Deposited Metal Products Co., 65 Bridge St., Newark, N. J.

Fitzgerald Mfg. Co., Torrington, Conn. (See page 451.)

Goodnow & Blake Mfg. Co., Fourth & Porter Sts., Detroit, Mich.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Naugatuck Mfg. Co., Naugatuck, Conn.

Weber Bros. Metal Works, 108-28 N. Jefferson St., Chicago, Ill.

FLOOR BOARD MATS FOR FORDS—See Mats, Floor Board

FLOOR BOARDS FOR FORDS — See Boards, Floor or Foot

FLOOR MATS—See Carpet, Coach; also Linoleum; also Mats, Rubber

FLOWER VASES—See Holders, Bouquet

FLUIDS, Priming

Sterno Corp., New York, N. Y. (See page 1147.)

FLUX, BRAZING—See Compounds, Brazing

FLUX, Soldering

(For self fluxing solder—See Solder, Bar and Wire)

Aero-Flux—See Reade Mfg. Co.

Allen Co., L. B., 4548 N. Lincoln St., Chicago, Ill. "Alumni-Flux."

Alumalux Co., E. Shelby St., Sidney, O. "Rajah."

Alumi-Flux—See Allen Co.

Aluminum Fix Co., 1964 E. 55th St., Cleveland, O.

Benson Co., Alex. R., Hudson, N. Y. "Yagers."

Blake Signal & Mfg. Co., Boston, Mass. (See page 1117.)

Brunner Chemical Works, 217 E. Third St., Cincinnati, O. "Queen."

Burnley Battery & Mfg. Co., Clay St., North East, Pa.

Callahan & Co., Geo., 213 Front St., New York, N. Y.

Chicago Solder Co., 4201 Wrightwood Ave., Chicago, Ill. "Kester." (See page 421.)

Corliss Supply & Mfg. Co., 1906 Olive St., St. Louis, Mo.

Crescent—See McGill Mfg. Co.

Crystalite—See Reade Mfg. Co.

Dunton Co., M. W., 150-52 Niagara St., Providence, R. I. "Nokorode."

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."

Dutch—Van Cleef Bros.

Emenar Co., 44 E. 23d St., New York, N. Y "Solderall."

Eureka—See Grasselli Chemical Co.

Falls Chemical Works, Cedar Falls, Iowa.

Grasselli Chemical Co., Guardian Bldg., Cleveland, O. "Standard," "Eureka."

Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder-Worker." (See page 227.)

Hess & Son, 2910 N. 16th St., Philadelphia, Pa. "Tinol."

Illinois Smelting & Refining Co., 410 N. Peoria St., Chicago, Ill. "Peerless."

Incomparable—See Reade Mfg. Co.

Kalbfleisch Corp., 31 Union Sq., W., New York, N. Y. (See page 387.)

Kester—See Chicago Solder Co.

McGill Mfg. Co., 259 Indiana Ave., Valparaiso, Ind. "Crescent," "Star."

MacKenzie-Waterhouse Co., 828 Transportation Bldg., Chicago, Ill. (See page 1171.)

Milmore Corp., 215 W. Jefferson Blvd., South Bend, Ind.

No-Compare—See Reschke Machine Works Co.

Nokorode—See Dunton Co.

Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 277.)

Norwesco—See Northwestern Chemical Co.

Peerless—See Illinois Smelting & Refining Co.

Queen—See Brunner Chemical Works.

Rajah—See Alumalux Co.

Reade Mfg. Co., 17th & Hoboken Sts., Jersey City, N. J. "Incomparable," "Readina," "Aero-Flux."

Readina—See Reade Mfg. Co.

Red Letter—See Ruby Chemical Co.

Reschke Machine Works Co., 908 N. Washington Ave., Wichita, Kans. "No Compare."

Rie-Nie—See Durkee-Atwood Co.

Ruby Chemical Co., 157 W. State St., Columbus, O. "Red Letter."

S. & P. Mfg. Co., 255 W. 169th St., New York, N. Y. (See page 283.)

Schneider, Emil, 298-306 South St., Newark, N. J.

Solderall—See Emenar Co.

Standard—See Grasselli Chemical Co.

Star—See McGill Mfg. Co.

Tinol—See Hess & Son.

Transco—See Transmuted Metals Co.

Transmuted Metals Co., 2334 Chicago Ave., Chicago, Ill. "Transco."

Universal Fluxine Co., 604 S. Main St., Urbana, O.

Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Wonder Worker—See Hall-Thompson Co.

Yagers—See Benson Co.

FLUX, WELDING—See Compounds, Welding

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FLY WHEEL BALANCERS—See Ways, Balancing

FOLDING PAILS—See Buckets, Collapsible

FOOT ACCELERATORS—See Pedals, Special Accelerator

FOOT ACCELERATORS FOR FORDS—See Accelerators, Foot

FOOT BOARDS FOR FORDS—See Boards, Floor or Foot

FOOT PUMPS—See Pumps, Foot Tire

FOOT PUSHES—See Pushes, Foot

FOOT RAILS—See Rests, Foot

FOOT RAILS FOR FORDS—See Rails, Foot

FOOT RESTS—See Rests, Foot; also Hassocks, Automobile

FOOT SCRAPERS—See Scrapers, Foot

FOOT WARMERS—See Heaters, Automobile; also Warmers, Electric Foot

FOOTMAN LOOPS—See Loops, Brass Snap and Strap

FORCING PRESSES—See Presses, Arbor

FORE CARS, MOTORCYCLE—See Cars, Motorcycle, Side and Fore

FORE-DOOR VENTILATORS—See Ventilators, Limousine and Fore-Door

FORGINGS, Drop

Accessory Forgings Co., 6438 Orleans St., Detroit, Mich.

Allegheny Forging Co., Keenan Bldg., Pittsburgh, Pa.

Allen & Co., S. L., No. Penn Junction, Philadelphia, Pa.

American Forge & Machine Co., 1650 Barth Ave., Canton, O. (See page 439.)

American Forging & Socket Co., Pontiac, Mich.

American Forgings Co., 2700-92 N. 24th St., Birmingham, Ala.

Atlas Drop Forge Co., 209 W. Mt. Hope Ave., Lansing, Mich.

Atwater Mfg. Co., Plantsville, Conn.

Auto Products Co., Station H., Cincinnati, O. (See page 1193.)

Baker Gun & Forging Co., Batavia, N. Y. (See page 639.)

Barnett Drop Forging Co., Ward Ave., Easthampton, Mass.

Bavier, Nelson, Cobalt, Conn.

Bearings Co. of America, Lancaster, Pa. (See page 161.)

Belden Machine Co., Whalley Ave. & Tryon St., New Haven, Conn.

Benton Harbor Malleable Foundry Co., Benton Harbor, Mich.

Bethlehem Steel Co., Third & Poplar Sts., South Bethlehem, Pa.

Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn.

Blakeslee Forging Co., Plantsville, Conn.

Bonney Vise & Tool Works, Allentown, Pa. (See page 437.)

Brewer Tichener Corp., Cortland, N. Y. (See page 567.)

Brill Co., J. G., 62d St. & Woodland Ave., Philadelphia, Pa.

Buffalo Drop Forge Co., 53-59 Carroll St., Buffalo, N. Y.

Canton Drop Forging & Mfg. Co., Canton, O. (See page 615.)

Cape Ann Tool Co., 150 Granite St., Pigeon Cove, Mass.

Capitol—See Washington Steel & Ordnance Co.

Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 345.)

Champion Machine & Forging Co., 3725 E. 78th St., Cleveland, O. (See page 441.)

Christe-Kline Forge Co., 2737-39 Gurin St., Detroit, Mich.

Clapp Mfg. Co., E. D., 305 W. Genesee St., Auburn, N. Y.

Cleveland City Forge & Iron Co., Hamilton & E. 45th Sts., Cleveland, O.

Cleveland Drop Forge Co., 3803 Superior Ave., Cleveland, O.

Cleveland Hardware Co., 4500 Hamilton Ave., Cleveland, O.

Columbus Bolt Works Co., Columbus, O. (See page 155.)

Columbus Forge & Iron Co., Columbus, O. (See page 425.)

Consolidated Mfg. Co., Toledo, O.

Crescent Forgings Co., Oakmont, Pa.

Crucible Steel Forge Co., Cleveland, O.

Davis Sewing Machine Co., Linden & Davis Aves., Dayton, O.

Dean Forging Co., 1825 E. Jackson St., Muncie, Ind.

Detroit Forging Co., 284 Mt. Elliott Ave., Detroit, Mich.

Drop Forging Co. of New York, 297 West Side Ave., Jersey City, N. J.

Duff Mfg. Co., Pittsburgh, Pa. (See page opposite Back Cover.)

Dunbar Drop Forge Co., 2506 W. 21st St., Chicago, Ill.

E. S. F.—See Electric Steel & Forge Co.

Eccles Co., Richard, 1-7 S. Division St., Auburn, N. Y.

Electric Steel & Forge Co., 6600 Grant Ave., Cleveland, O. "E. S. F."

Electro Steel Co., Pittsburgh, Pa.

Endicott Forging & Mfg. Co., Endicott, N. Y.

Eureka Co., North East, Pa.

Federal Equipment & Supply Co., 298 Broadway, New York, N. Y.

Forge Products Corp., 901 Green St., Ann Arbor, Mich.

Frost Gear & Forge Co., Jackson, Mich. (See page 425.)

Fruin Drop Forge Co., 343-55 Root St. Chicago, Ill.

Fulton Machine & Forging Co., Canal Fulton, O.

General Drop Forge Co., Buffalo, N. Y. (See page 665.)

General Railway Signal Co., Rochester, N. Y.

General Steel Co., Public Service Bldg., Milwaukee, Wis.

Globe Malleable Iron & Steel Co., 101 Greenway Ave., Syracuse, N. Y.

Grant-Hammond Corp., New Haven, Conn.

Great Lakes Forge Co., 14 E. Jackson Blvd., Chicago, Ill. "Kleenkut." (See page 425.)

Harley Co., Page Blvd., Springfield, Mass. (See pages 205 and 425.)

Harvey Spring & Forging Co., 106 A 17th St., Racine, Wis. (See page 981.)

Henry & Allen, 2-36 Wadsworth St., Auburn, N. Y.

Herbrand Co., 109-25 E. State St., Fremont, O.

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FORGINGS, Drop (Continued)

Imperial Drop Forge Co., 510 S. Harding St., Indianapolis, Ind.

Indianapolis Drop Forging Co., 1300 Madison Ave., Indianapolis, Ind.

Infuso—See Steel Improvement & Forge Co.

Ingalls-Shepard Forging Co., 147th St. & Page Ave., Harvey, Ill.

Interstate Drop Forge Co., 27th & Lake Sts., Milwaukee, Wis.

Jefferson Forge Products Co., 12341 E. Jefferson Ave., Detroit, Mich.

Ketler-Elliott Co., 3153 S. California Ave., Chicago, Ill.

Keystone Drop Forge Works, Easton, Pa.

Keystone Forging Co., Duke & Front Sts., Northumberland, Pa.

Kilborn & Bishop Co., Chapel & Lloyd Sts., New Haven, Conn.

Kleenkut—See Great Lakes Forge Co.

Kraeuter & Co., Newark, N. J. (See page 711.)

Kropp Forge Co., 242 S. 53rd St., Cicero, Ill.

Ladish Drop Forge Co., Cudahy, Wis. (See page 423.)

Lakeside Forge Co., Erie, Pa. (See page 1161.)

Lansing Forge Co., Logan & Albert Sts., Lansing, Mich.

Larson, Chas. E., 111 N. Desplaines St., Chicago, Ill.

Lehigh Engineering Co., Royersford, Pa.

Lough Bros., 90 West St., New York, N. Y. (Dealers.) (See page 207.)

Machinery Forging Co., 5450 Hamilton Ave., Cleveland, O.

Melling Forging Co., 501 North St., Lansing, Mich.

Michigan Bolt & Nut Works, ft. Meldrum Ave., Detroit, Mich.

Michigan Drop Forge Co., S. Saginaw St., Pontiac, Mich.

Milwaukee Forge & Machine Co., Milwaukee, Wis. (See pages 631 and 691.)

Moline Forging & Mfg. Co., Moline, Ill.

Moore Drop Forging Co., 386 Birnie Ave., Springfield, Mass.

Mulholland, W. J., Commercial Trust Bldg., Philadelphia, Pa.

New England Forge Co., 9 Plymouth St., Worcester, Mass.

Nilson-Miller Co., 1300-06 Hudson St., Hoboken, N. J.

O. K. Tool Holder Co., Shelton, Conn.

Octigan Drop Forge Co., 2500 Lowe Ave., Chicago, Ill.

Obenberger Forge Co., John, West Allis, Wis.

Ohio Forge Co., Cleveland, O. (See page 1023.)

Oliver Iron & Steel Co., Tenth & Muriel Sts., Pittsburgh, Pa.

Owensboro Forging Co., W. Main St., Owensboro, Ky.

Page-Storms Drop Forge Co., Chicopee, Mass.

Pan Motor Co., St. Cloud, Minn.

Park Drop Forge Co., Cleveland, O. (See page 329.)

Pittsburgh Knife & Forge Co., Pittsburgh, Pa. (See page 501.)

Pollak Steel Co., 2815-16 Equitable Bldg., New York, N. Y. (See page 423.)

Portland Forge & Foundry Co., Portland, Ind.

Quaker Tool Co., 120 W. Venango St., Philadelphia, Pa.

Queen City Forging Co., Tennyson & Dumont Sts., Cincinnati, O.

Revere Drop Forge Co., 164 Broadway, Revere, Mass.

Richmond Forging Corp., Richmond, Va.

Rivetless Chain & Engineering Co., Avon, Pa.

Rockford Drop Forge Co., Rockford, Ill. (See page 939.)

Savage Arms Corp., Sharon, Pa.

Scherer & Co., H., 440 E. Jefferson Ave., Detroit, Mich.

Scranton Forging Co., Scranton, Pa.

Smith Corp., A. O., Milwaukee, Wis. (See page 671.)

Smith & Co., H. D., Plantville, Conn.

Smith & Hemenway, 130 Coit St., Irvington, N. J.

Spang & Co., Butler, Pa.

Spicer Mfg. Corp., South Plainfield, N. J. (See page 541.)

Standard Equipment Co., Lorain Ave., & W. 100th St., Cleveland, O.

Standard Forgings Co., Railway Exchange Bldg., Chicago, Ill.

Standard Parts Co., Cleveland, O. (See page 1149.)

Steel Forgings Co., Brotherton Rd., Cincinnati, O.

Steel Improvement & Forge Co., 5003 Wilsor Ave., Cleveland, O. "Infuso."

Storms Drop Forging Co. (E. Spring[illegible]), Springfield, Mass.

Strieby & Foote Co., 301 Ogden St., N[illegible], N. J.

Sundberg Co., 1024 W. Kinzie St., Chic[illegible]

Thompson Drop Forge Co., Plantsville, [illegible]

Tioga Steel & Iron Co., 52nd St. & [illegible] Ferry Ave., Philadelphia, Pa.

Transue & Williams Steel Forging [illegible], Alliance, O. (See page 895.)

Twin City Forge & Foundry Co., St[illegible], Minn.

Union Drop Forge Co., 358 W. Gran[illegible], Chicago, Ill.

Union Forging Co., Union, N. Y. (See page 249.)

Union Switch & Signal Co., Swissvale, [illegible]

United States Chain & Forging Co., Th[illegible] Ave., Pittsburgh, Pa.

Universal Machine Co., Bowling Gre[illegible]. (See page 545.)

Washington Steel & Ordnance Co., Wa[illegible]ton, D. C. "Capitol."

West & Dennett Co., 14 E. Jackson [illegible], Chicago, Ill.

Western Drop Forge Co., Marion, [illegible] (See page 727.)

Western Malleable Steel Co., 1250 Jef[illegible] Ave., W., Detroit, Mich.

Western Tool & Forge Co., Brackenridge, Pa.

Wharton, Jr., & Co., Wm., Easton, Pa.

Wilcox, Crittenden & Co., 2 S. Main St., Middletown, Conn.

Wilcox Mfg. Co., D., Mechanicsburg, Pa.

Williams & Co., J. H., 38 Richards St. Brooklyn, N. Y. (See page 1081.)

Woonsocket Wagon Mfg. Co., 15 Worrall St., Woonsocket, R. I.

Wyman-Gordon, Worcester, Mass. (See Back Bone.)

FORMING LATHES—See Lathes, Forming

FORMING MACHINES — See Machines, Louvre, Forming; also Machines, Hood Hinge Forming

FOUNDRY SUPPLIES—See Supplies, Foundry.

FRAME EXTENSIONS FOR FORDS—See Extensions, Dummy Frame

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FRAME LINING—See Lining, Body or Frame

FRAME PADDING—See Lining, Body or Frame

FRAMES, Hack Saw

(For Hack Saw Blades—See Blades, Hack Saw)

A A A—See Atkins & Co.

Atkins & Co., E. C., 402 S. Illinois St., Indianapolis, Ind. "A A A."

Bridgeport Hardware Mfg. Corp., 461 Iranistan Ave., Bridgeport, Conn. "Matchless."

Buffum Tool Co., Louisiana, Mo. (See page 529.)

Caldwell Tool Mfg. Co., 87 Warren St., New York, N. Y.

Consolidated Tool Works, 261 Broadway, New York, N. Y. "Pilot."

Crown—See Union Hardware Co.

Diamond Saw & Stamping Works, 357-61 Seventh St., Buffalo, N. Y. "Sterling."

Dikeman Mfg. Co., Merwin St., Norwalk, Conn.

Disston & Sons, Henry, (Tacony), Philadelphia, Pa.

Eagle—See Union Hardware Co.

Goodell-Pratt Co., Greenfield, Mass.

Griffin Co., G. W., Franklin, N. H.

Jennings & Co., C. E., 71-73 Murray St., New York, N. Y.

Langelier Mfg. Co., 67 Clifford St., Providence, R. I.

Master Grip—See Thompson & Son Co.

Matchless—See Bridgeport Hardware Mfg. Corp.

Milford—See Thompson & Son Co.

Millers Falls Co., Millers Falls, Mass. "Star."

Napier Saw Works, Myrick Bldg., Springfield, Mass.

Pilot—See Consolidated Tool Works.

Red Devil—See Smith & Hemenway.

S. & I. Co., 55-57 Governor St., Springfield, Mass.

Smith & Hemenway, 130 Colt St., Irvington, N. J. "Red Devil."

Star—See Millers Falls Co.

Starrett Co., L. S., Athol, Mass.

Sterling—See Diamond Saw & Stamping Works.

Thompson & Son Co., Henry G., 277 Chapel St., New Haven, Conn. "Milford," "Master Grip."

Union Hardware Co., Torrington, Conn. "Crown," "Eagle."

Union Tool Co., 48 E. River St., Orange, Mass.

Utility—See West Haven Mfg. Co.

Victor Saw Works, 1 Rowland Ave., Springfield, Mass.

West Haven Mfg. Co., 22 Elm St. (West Haven), New Haven, Conn. "Utility."

FRAMES, Pressed Steel

Detroit Pressed Steel Co., Detroit, Mich. "Presteel." (See page 1203.)

Elyria Steel Products Co., Elyria, O.

Forsyth Bros. Co., Harvey, Ill. (See page 1067.)

Hydraulic Pressed Steel Co. of The Hydraulic Steel Co., Cleveland, O. (See page 439.)

Mansfield Steel Corp., 288 E. Milwaukee Ave., Detroit, Mich.

Parish Mfg. Co., Reading, Pa. (See page 431.)

Parish & Bingham Corporation, Cleveland, O. (See pages 427 to 430.)

Presteel—See Detroit Pressed Steel Co.

Savage Arms Corp., Sharon, Pa.

Sharon Pressed Steel Co., Sharon, Pa.

Slick-Knox Steel Co., Sharon, Pa.

Smith Corp., A. O., Milwaukee, Wis. (See page 671.)

FRAMES, WOOD CUSHION—See Pa Wood

FRICTION CLUTCH TRACTOR PULLE —See Pulleys, Tractor Clutch

FRICTION CLUTCHES — See Clutch Friction

FRICTION DISCS—See Frictions, Fibre

FRICTION LEATHER—See Leather, F tion

FRICTIONS, Fibre

(For use in Friction Transmission)

Divine Bros. Co., 202 Whitesboro St., Ut N. Y.

Rockwood Mfg. Co., 1801 English Ave., Ind apolis, Ind.

FRONT WHEEL BEARINGS FOR FOR —See Bearings, Front Wheel

FRONT WHEEL SPINDLES—See Spind Special Front Wheel for Fords

FUEL ECONOMIZERS—See Mixers, Ec omizers or Agitators, Fuel

FUEL LEVEL INDICATORS—See Ga Gasoline Tank

FUEL MIXERS—See Mixers, Economi or Agitators; also Vaporizers

FUEL PUMPS—See Pumps, Airplane F

FUEL RESERVE COCKS—See Valves, T Way Tank

FUEL RESERVE COCKS FOR FORDS See Cocks, Fuel Supply

FUEL SAVERS—See Mixers, Economi or Agitators

FUEL STRAINERS—See Funnels, Gasoli also Strainers, Gasoline

FUNNELS and MEASURES, Metal

(For Garage use for Gasoline or Oil)

All-in-One—See Brookins Mfg. Co.

Atlantic Stamping Co., 180 Ames St., Roche ter, N. Y.

Beacon—See Mooers-Wright Co.

Best, R. L., Bismarck, N. Dak.

Brookins Mfg. Co., Dayton, O. "All-in-One

Brown Stamping Co., Toledo, O.

Central Stamping Co., 172-74 Fulton St., Ne York, N. Y. "Puritan."

Dickson, J. M., 310 E. Hudson Terminal, Ne York, N. Y.

Dover Stamping & Mfg. Co., 385 Putnam Ave., Cambridge, Mass. "Saval," "Kom pact," "Flexo." (See page 433.)

Edelmann & Co., E., 2638 N. Crawford Ave Chicago, Ill. "Swing Spout."

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A good foundation is the prime essential for the successful construction of anything.

The frame is the foundation of an automobile.

To build a successful Automobile, start with a good foundation.

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MASTER
SERVICE
STANDARD
VIM

Passenger Cars

ANDERSON
ARMSTRONG-SIDDELEY (England)
AUBURN
BARLEY (Roamer)
BARNES (Alsace)
BEGGS
BIDDLE
CADILLAC
CHANDLER
CLEVELAND
COMET
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CUNNINGHAM
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HUDSON
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LOCOMOBILE
MERCER
MOON
NATIONAL
OWEN-MAGNETIC
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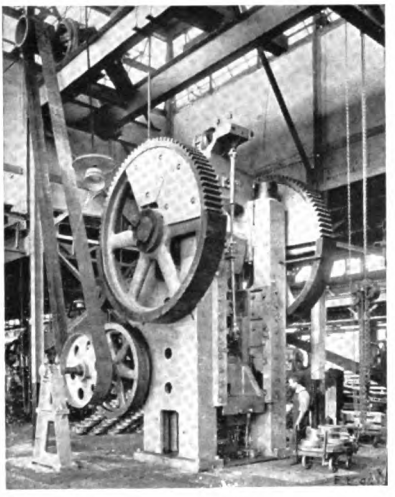
can be heat-treated

Our heat-treating plant is the largest and best equipped of its kind in the frame making world. Here we have 22,400 sq. ft. of ground containing a large assemblage of furnaces, a pickling room, and a chemical laboratory.

We have facilities for handling huge quantities of steel required in the making of a vast number of frames for which we are constantly contracting.

Over fifteen years of heat-treating experience is at your disposal.



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Parish & Bingham FRAMES

are designed and built to suit every particular need

Typical design of Automobile Frame Side Rails made from P & B Special Analysis Steel.

We build frames either to your own design or will design them for you.

We have a large assortment of stock dies for almost any type frame required.

We can, if required, supply frames from any special analysis steel, and can also heat treat the frames if desired.

THE PARISH & BINGHAM CORPORATION

Cleveland
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The Birthplace of the
HEAT TREATED AUTOMOBILE FRAME

The Parish Factory at Reading, Pa., will go down in automobile history as the birthplace of heat-treated automobile frames.

When automobiles were first introduced, comparatively little attention was paid to the quality of the frame, for there were many other things which were deemed of greater importance, hence the frame received but little consideration.

When we entered the field, we found that substantially all automobile frames were made of low-grade steel. Steel lacking in the qualities essential to safety and lasting service. We found that bulk took the place of strength and there was no warrant against accidents due to defects developed in the process of manufacture.

Seeing these conditions existing, here we found our opportunity to give to the motor world a better frame with greater lasting qualities and the high degree of safety.

After exhaustive experiments, we found that a particular grade of Chrome Steel, made according to specifications (original with us), combined, to a greater degree than any other steel, all the qualities desirable for automobile frames.

It has also been our belief that it is folly to risk an accident for the sake of saving a few dollars in raw material, so we adopted this steel; a decision we have never had cause to regret.

Having secured what we believed to be the best existing steel for automobile frames, we proceeded to the subject of treatment.

We discovered that if we hardened and tempered precisely as you would temper a cutting tool the metal became homogeneous throughout and all weakness at the point of bending disappeared, hence there were no weak points in the frame. The above is the story of Parish Chrome Steel Heat-Treated Frames. Since we originated and started the heat-treating of automobile frames, we have been imitated and copied by others, but the distinction of being the first has kept our heat-treating process always a step in advance and has made the name "Parish Heat-Treated Frames" stand for the last word in the science of automobile frame construction.

Parish
READING - DETROIT
FRAMES

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FUNNELS and MEASURES, Metal (Continued)

Entorp Filter Co., Amboy, Ill.
Flexo—See Dover Stamping & Mfg. Co.
Groetken Pump Co., 171 Middle Ave., Aurora, Ill.
Hoaglin Mfg. Co., F. L., 200 N. Main St., Waupaca, Wis. "Nospil."
Kirk & Blum, 2346 Spring Grove Ave., Cincinnati, O.
Kompact—See Dover Stamping & Mfg. Co.
Kraft, A. C., 322-25 W. Lake St., Chicago, Ill.
Mooers-Wright Co., 1400 Broadway, New York, N. Y. "Beacon." (See page 1167.)
National Enameling & Stamping Co., 413 Fifth Ave., New York, N. Y. "Nesco."
National Mfg. Co., 101 S. E. Fifth St., Des Moines, Iowa.
Nesco—See National Enameling & Stamping Co.
No-Shammy Products Co., 5710 Hough Ave., Cleveland, O.
Nospil—See Hoaglin Mfg. Co.
P. R. B. Pump Co., Hannibal, Mo.
Puritan—See Central Stamping Co.
Puritan—See Sexton Can Co.
Saval—See Dover Stamping & Mfg. Co.
Schuyler Mfg. Co., W. S., 607 W. Main St., Savannah, Mo.
Sexton Can Co., 123 Broad St., Boston, Mass. "Puritan."
Swing Spout—See Edelmann & Co.
Vogel & Bros., Wm., Brooklyn, N. Y. (See page 433.)
Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 735.)

FUR BOOTS—See Boots, Motorists'

FUR COATS—See Clothing, Motorists'

FUR GLOVES—See Gloves, Motorists'

FURNACES, Annealing and Case Hardening

American Gas Furnace Co., 24-26 John St., New York, N. Y. (See page 435.)
Anthony Co., 138 West Ave., Long Island City, N. Y. (See page 747.)
Beeman & Broughton Co., 454-58 21st St., Detroit, Mich.
Bellevue Furnace Co., 2971 Bellevue Ave., Detroit, Mich.
Best, W. N., 11 Broadway, New York, N. Y.
Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
Buckeye—See Macleod Co.
Buzzer—See Hones, Charles A.
Chicago Flexible Shaft Co., 5600 W. Roosevelt Rd., Chicago, Ill. "Stewart."
Gantt—See Witteman Co.
Gilbert & Barker Mfg. Co., 28 Union St., Springfield, Mass.
Hauck Mfg. Co., 126-34 Tenth St., Brooklyn, N. Y.
Hones, Charles A., Noble & Franklin Sts., Brook'yn, N. Y. "Buzzer."
Johnson Gas Appliance Co., 520 E Ave., West, Cedar Rapids, Ia.
Lancaster Iron Works, 580 S. Prince St., Lancaster, Pa. "Mircs."
Macleod Co., 2232 Bogen St., Cincinnati, O. "Buckeye."
Mircs—See Lancaster Iron Works.
Rockwell Co., W. S., 50 Church St., New York, N. Y.
Scott, C. U., 1240 Second Ave., Davenport, Ia.
Scott & Son, C. W., 1510 First Ave., Rock Island, Ill.
Standard Fuel Engineering Co., 461-75 Baltimore Ave., W., Detroit, Mich.
Stewart—See Chicago Flexible Shaft Co.
Tate-Jones & Co., Empire Bldg., Pittsburgh, Pa.
Waisner Mfg. Co., Rockford, Ill.
Wayne Oil Tank & Pump Co., 703 Canal St., Fort Wayne, Ind. (See page 953.)
Whiting Foundry Equipment Co., 157th & Lathrop Sts., Harvey, Ill.

FURNACES, Babbitt Melting

American Gas Furnace Co., 24-26 John St., New York, N. Y. (See page 435.)
Anthony Co., 138 West Ave., Long Island City, N. Y. (See page 747.)
Beeman & Broughton Co., 454-58 21st St., Detroit, Mich.
Buzzer—See Hones, Charles A.
Chicago Flexible Shaft Co., 5600 W. Roosevelt Rd., Chicago, Ill. "Stewart."
Davis Machine Tool Co., 307 St. Paul St., Rochester, N. Y. "Vesuvius."
Hauck Mfg. Co., 126-34 Tenth St., Brooklyn, N. Y.
Hones, Charles A., Noble & Franklin Sts., Brooklyn, N. Y. "Buzzer."
Johnson Gas Appliance Co., 520 E Ave., West, Cedar Rapids, Ia.
Stewart—See Chicago Flexible Shaft Co.
Vesuvius—See Davis Machine Tool Co.

FURNACES, Brass and Copper Melting

Anthony Co., 138 West Ave., Long Island City, N. Y. (See page 747.)
Barnett Foundry & Machine Co., Oscar, Lyons Ave. & Coit St., Irvington, N. J.
Best, W. N., 11 Broadway, New York, N. Y.
Booth Electric Furnace Co., 326 W. Madison St., Chicago, Ill.
Brass Founders Supply Co., 357 Wilson Ave., Newark, N. J.
Chicago Flexible Shaft Co., 5600 W. Roosevelt Rd., Chicago, Ill. "Stewart."
Fisher Co., Alfred, 803 W. Madison St., Chicago, Ill.
Hauck Mfg. Co., 126-34 Tenth St., Brooklyn, N. Y.
Hawley Down Draft Furnace Co., Valley Ave. & Hellertown Rd., Easton, Pa.
Johnson Gas Appliance Co., 520 E Ave., West, Cedar Rapids, Ia.
Kroeschell Bros. Co., 444 W. Erie St., Chicago, Ill. "Kroeschell-Schwartz."
Kroeschell-Schwartz—See Kroeschell Bros. Co.
Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md. "Steele-Harvey."
Rockwell Co., W. S., 50 Church St., New York, N. Y.
Steele-Harvey—See Monarch Engineering & Mfg. Co.
Stevens, Frederic B., Third & Larned Sts., Detroit, Mich.
Stewart—See Chicago Flexible Shaft Co.
Wayne Oil Tank & Pump Co., 703 Canal St., Fort Wayne, Ind. (See page 953.)
Whiting Foundry Equipment Co., 157th & Lathrop Sts., Harvey, Ill.

FURNACES, CASE HARDENING — See Furnaces, Annealing

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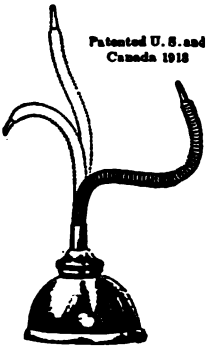
If it hasn't the flexible cleaning device—it isn't an

"ALL-WAY"



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THERE is only one genuine. Press the spout downward—if the flexible cleaning device protrudes through the nozzle, it's an "ALL-WAY."

Made of the finest quality flexible steel tubing—it will outlast the ordinary oiler many years.

Order promptly from your jobber or direct from

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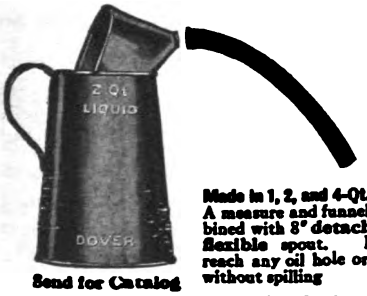
NEW DOVER

Flexo Combination Measure & Funnel

HEAVILY COPPER PLATED



Made in 1, 2, and 4-Qt. Sizes
A measure and funnel combined with 8" detachable flexible spout. Easily reach any oil hole or tank without spilling

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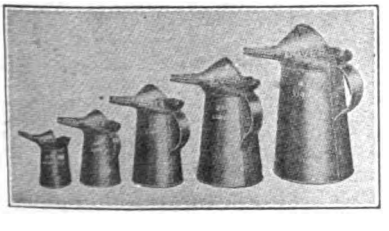

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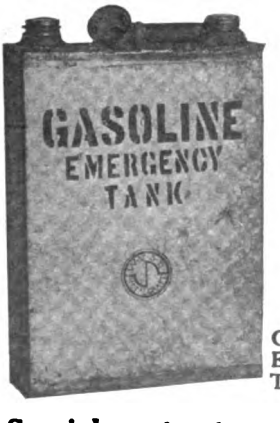
Funnels and Measures

Galvanized Utility Measure

Trade Mark



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Special contract work in all sheet metals

Write for our Catalogue Showing Full Line of Funnels, Measures and Oilers

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BROOKLYN, N. Y. CHICAGO, ILL.

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FURNACES, COPPER MELTING—See Furnaces, Brass and Copper Melting

FURNACES, GASOLINE — See Torches, Gasoline

FURNACES, HEAT TREATING—See Furnaces, Annealing and Case Hardening

FURNACES, Soldering

(See also Torches, Gasoline)

Anthony Co., 138 West Ave., Long Island City, N. Y. (See page 747.)

Buzzer—See Hones, Charles A.

Hones, Charles A., Noble & Franklin Sts., Brooklyn, N. Y. "Buzzer."

Yost Mfg. Co., Meadville, Pa. (See page 1047.)

FUSE CLIPS—See Clips, Fuse

FUSELAGE WIRE PROTECTORS, AIRPLANE—See Protectors, Airplane Rubber Fuselage Wire

FUSES, Electric

Buss—See Bussmann Mfg. Co.

Bussmann Mfg. Co., St. Louis, Mo. "Buss." (See page 639.)

Chicago Fuse Mfg. Co., Chicago, Ill. "Union." (See page 615.)

D. & W. Fuse Co. (Elmwood Sta.), Providence, R. I.

Daum, A. F., 1157 Hodgkiss St., Pittsburgh, N. S., Pa.

Economy Fuse & Mfg. Co., 328 W. Kinzie St., Chicago, Ill.

Electric Fuseguard Co., 60 Shipman St., Newark, N. J.

General Electric Co., Schenectady, N. Y. (See page 793.)

Johns-Manville Co., H. W., Madison Ave. & 41st St., New York. N. Y. "Noark."

Killark Electric Mfg. Co., St. Louis Mo. (See page 435.)

Monarch Re-Fillable Fuse Co., Jamestown, N. Y.

Noark—See Johns-Manville Co.

Oettinger Corp., F. W., 25 Vanderbilt Ave., New York, N. Y. "Tower." (See page 435.)

Tower—See Oettinger Corp.

Union—See Chicago Fuse Mfg. Co.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

GAGE GLASS REFLECTORS—See Mirrors, Water Gage

GAGE GLASSES—See Glasses, Lubricator

GAGE LAMPS—See Lamps, Electric Dash

GAGES, AIR — See Gages, Steam; also Gages, Tire

GAGES, Aircraft Gasoline

Boston Auto Gage Co., 8 Waltham St., Boston, Mass. (See page 437.)

Brighton—See Rochester Mfg. Co.

Mercury—See Rochester Mfg. Co.

National Gauge & Equipment Co., La Crosse, Wis. (See page 437.)

Rochester Mfg. Co., 29-49 Halstead St., Rochester, N. Y. "Mercury," "Brighton," "Rocman."

Rocman—See Rochester Mfg. Co.

GAGES, ALIGNING — See Gages, Wheel Aligning

GAGES, Battery

(Pocket and Dash Board Battery Testers. For Standard Instruments—See Ammeters; For Battery Storage Testing Instruments—See Instruments, Storage Battery Testing)

Advance—See Eldredge Electric Mfg. Co.

American Ever Ready Works of National Carbon Co., 303 Thompson Ave., Long Island City, N. Y. "Eveready."

Ballman-Whitten Mfg. Co., 4015 Laclede Ave., St. Louis, Mo.

Batometer—See Fairbanks Co.

Burton-Rogers Co., 755 Boylston St., Boston, Mass. (Sales Department for Hoyt Electrical Instrument Works, Pemacook, N. H.) "Ultimate." "Utility." (See page 467.)

Carleton Co., 176 Summer St., Boston, Mass.

Cemco—See Clark Electric Meter Co.

Connecticut Telephone & Electric Co., Meridan, Conn.

Dow Mfg. Co., 181 Adams St., Braintree, Mass.

Eclipse—See Eldredge Electric Mfg. Co.

Eldredge Electric Mfg. Co., 3 Post Office Sq., Springfield, Mass. "Advance," "Eclipse."

Eveready—See American Ever Ready Works.

Fairbanks Co., New York, N. Y. (Sole Distributors for Hempy-Cooper Mfg. Co., Kansas City, Mo.) "Batometer." (See pages 137 to 140.)

Genco—See General Scientific Equipment Co.

General Scientific Equipment Co. (North Philadelphia), Philadelphia, Pa. "Genco."

Gray & Davis, Boston, Mass. (See page 911.)

Handy—See Roller-Smith Co.

Hempy-Cooper Mfg. Co.—See Fairbanks Co.

Harvard Electric Co., 525 W. Van Buren St., Chicago, Ill.

Hoyt Electrical Instrument Works—See Burton-Rogers Co.

Jewell Electrical Instrument Co., 1643 W Walnut St., Chicago, Ill.

Loewus, Edwin H., 304 W. 54th St., New York, N. Y. (See page 1185.)

Nagel Electric Co., W. G., Toledo, O. (See page 1141.)

National Gauge & Equipment Co., La Crosse, Wis. (See page 437.)

P. V.—See Roller-Smith Co.

Pennsylvania Rubber & Supply Co., 1845-47 Euclid Ave., Cleveland, O. "Prsco."

Prsco—See Pennsylvania Rubber & Supply Co.

Readrite Meter Works, 137 N. Main St., Bluffton, O.

Roller-Smith Co., 9 Barclay St., New York, N. Y. "Handy." "P. V." (See page 83.)

Sholder-Excel Mfg. Co., Clyde, O.

Shontz Co., H. B., 157 W. 54th St., New York, N. Y. (Dealers.) (See page 733.)

Standard Electric Mfg. Co., 126 South St., Newark, N. J.

Sterling Mfg. Co., 2845-53 Prospect Ave., Cleveland, O. "Trescot."

Trescot—See Sterling Mfg. Co.

Ultimate—See Burton-Rogers Co.

Utility—See Burton-Rogers Co.

Westinghouse Electric & Mfg. Co., 82 Worthington St., Springfield, Mass. (See pages 940 and 941.)

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Banner Assortment

"Killark" Auto Fuses

Strong, accurate, dependable fuses for every make of car.

Our BANNER ASSORTMENT contains 100 of the best selling fuses, is packed in a cardboard box, and makes an attractive counter display.

Write for our list No. A 1, showing "Proper Killark Fuses for Every Car."

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A GAS MACHINE FOR EVERY HEATING PROCESS

HEATING MACHINE No. 29

This machine is for continuous hardening and annealing.

For hardening ball-bearing, detachable saw teeth and for annealing brass shells or any other work not exceeding 2½ inches in length.

HEATING MACHINE No. 51
For Coloring Iron and Steel Work

For tempering and coloring steel work "Carbonia" (or gun metal finish). This machine is practically an improved "Tumbling Barrel" heated with perfect uniformity; the temperature can be controlled by reference to thermometer.

Made in various styles.

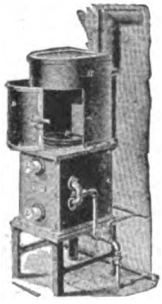
OVEN FURNACE No. 38

Oven Furnaces are designed to heat pieces of any desired dimension, uniformly to any degree of temperature required for annealing and hardening metal work.

For high-speed or tool steel.

Made in various sizes.

CYANIDE FURNACE No. 1



This style of furnace is made for hardening steel work in cyanide of potassium, as cutters, dies, springs, rolls, etc.

Made in various sizes and styles.

Gas as Fuel

has many advantages over other fuels. For example: with gas you can control the heat within 5° F. and maintain a uniform temperature for annealing and hardening up to the heat required.

During the past 30 years we have acquired an experience in the utilization of gas in mechanical heating process that will help you solve your heating problems.

Tell us your problems and we will show you how to overcome them in the most efficient manner. Write us today.

AMERICAN GAS FURNACE CO.

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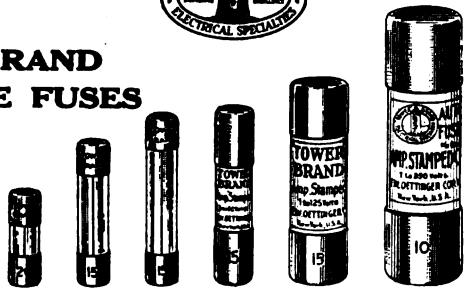
"TOWER" BRAND ELECTRICAL SPECIALTIES

"TOWER" BRAND AUTOMOBILE FUSES

STANDARD OF EXCELLENCE



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GAGES, Battery (Continued)

Weston Electrical Instrument Co., 16 Weston Ave., Newark, N. J. (See page 85.)

GAGES, Boiler Water-Line

(For indicating height of water in steam boilers)

Ashton Valve Co., 161 First St. (Cambridge), Boston, Mass.

Genco—See General Scientific Equipment Co.

General Scientific Equipment Co., (North Philadelphia), Philadelphia, Pa. "Genco."

Reliable Water Gauge Co., 1616 Pine St., St. Louis, Mo.

Schaeffer & Budenberg Mfg. Co., 338 Berry St., Brooklyn, N. Y.

Wiltbonco Mfg. Co., 28 Porter St. (Jamaica Plain), Boston, Mass.

GAGES, Centre

Athol Machine Co., Athol, Mass.

Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.

Goodell-Pratt Co., Greenfield, Mass.

Starrett Co., L. S., Athol, Mass.

Wyke, J., South St., Wilmington, Mass

GAGES, CIRCULATION — See Gages, Water Circulation

GAGES, COMPRESSION—See Gages, Cylinder Compression

GAGES, Cylinder

Am-Pe-Co. Sales Co., Marshalltown, Iowa. (See page 437.)

Ames Co., B. C., Ames St., Waltham, Mass.

Federal Products Corp., 393 Harris Ave., Providence, R. I. (See page 1103.)

GAGES, Cylinder Compression

(For testing compression in gas engine cylinders)

Brown Co., 1071-73 Clinton St., Syracuse, N. Y.

Casey-Hudson Co., 341 E. Ohio St., Chicago, Ill.

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.

Foxboro Co., Neponset Ave., Foxboro, Mass.

M-R Co., 122 N. 14th St., Lincoln, Neb.

Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill.

Peterman & Co., 2721 N. Clark St., Chicago, Ill.

Pierce, Butler & Pierce (Valve & Gage Division), 282 James St., Syracuse, N. Y.

United States Gauge Co., 37 Liberty St., New York, N. Y. (See page 441.)

GAGES, Depth

Athol Machine Co., Athol, Mass.

Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.

Goodell-Pratt Co., Greenfield, Mass.

Starrett Co., L. S., Athol, Mass.

GAGES, Drill and Wire

Blodgett Mfg. Co., 248 Penn St., Rochester, N. Y.

Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.

Detroit Twist Drill Co., Detroit, Mich. (See page 955.)

Morse Twist Drill & Machine Co., 162 Pleasant St., New Bedford, Mass.

Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."

Pexto—See Peck, Stow & Wilcox Co.

Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 339.)

Standard Tool Co., 6900-34 Central Ave., Cleveland, O.

Starrett Co., L. S., Athol, Mass.

GAGES, Gasoline Tank

(For indicating the amount of gasoline in fuel tanks)

Akron-Selle Co., High & Chestnut Sts., Akron, O. "Tasco."

Ashton Valve Co., 161 First St. (Cambridge), Boston, Mass.

Atlantic Motor & Supply Co., 63 Gorham St., Boston, Mass.

Boston Auto Gage Co., 8 Waltham St., Boston, Mass. "Triumph," "Challenge." (See page 437.)

Brighton—See Rochester Mfg. Co.

Challenge—See Boston Auto Gage Co.

Champion Mfg. Co., 74th St. & Kimbark Ave., Chicago, Ill. "Safegard." (See page 439.)

Cole—See Stemco Engineering Co.

Commonwealth Brass Corp., Detroit, Mich. (See page 1139.)

Cox Brass Mfg. Co., Albany, N. Y. (See page 261.)

Dunn Motor Device Co., 528 Massachusetts Ave., Indianapolis, Ind.

Foxboro Co., Neponset Ave., Foxboro, Mass.

Gasograph—See New Standard Adding Machine Co.

Gem Stamped Steel Co., 16 Beach St., Everett, Mass.

Imperial Fluid Gauge Co., Third St. & Rex Ave., S. E., Canton, O.

Lincoln Products Co., 161 Massachusetts Ave., Boston, Mass.

Locktite Patch Co., 7850 Morrow St., Detroit, Mich.

Mercury—See Rochester Mfg. Co.

Nagel Electric Co., W. G., Toledo, O. (See page 1141.)

National Gauge & Equipment Co., La Crosse, Wis. (See page 437.)

National Motor Supply Co., Painesville, O.

New Standard Adding Machine Co., 3705 Forest Park Blvd., St. Louis, Mo.

Rochester Mfg. Co., 29-49 Halstead St., Rochester, N. Y. "Mercury," "Brighton," "Rocman."

Rocman—See Rochester Mfg. Co.

Safegard—See Champion Mfg. Co.

Stemco Engineering Co., Second & Webb Sts., Dayton, O. "Cole."

Tasco—See Akron-Selle Co.

Thompson & Stubor, Rochester, N. Y.

Triumph—See Boston Auto Gage Co.

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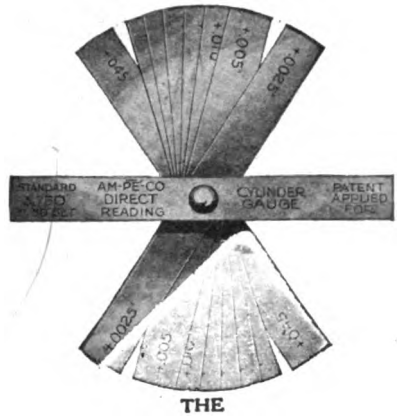

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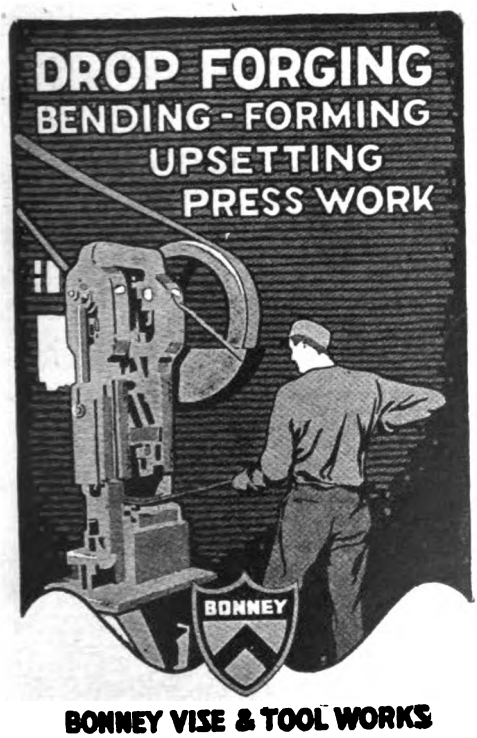

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GAGES, Gasoline Tank, for Fords

(For indicating the amount of gasoline in fuel tanks)

American Automatic Devices Co., 515 W. Monroe St., Chicago, Ill. (See page 643.)

Apco Mfg. Co., Providence, R. I.

Baer-Glauber Co., 6523 Euclid Ave., Cleveland, O.

Boston Auto Gage Co., 8 Waltham St., Boston, Mass. "Challenge." (See page 437.)

Brighton—See Rochester Mfg. Co.

Buffalo—See O. K. Lock Co.

Buffalo Gauge Co., 336 Hampshire St., Buffalo, N. Y.

Challenge—See Boston Auto Gage Co.

Dependo—See Roper & Co.

Ever-Right Production Corp., 351-53 Jay St., Brooklyn, N. Y.

Gas-O-Larm—See Locktite Patch Co.

Gasograph—See New Standard Adding Machine Co.

Gem Stamped Steel Co., 16 Beach St., Everett, Mass.

Issaquah Garage, Issaquah, Wash.

Locktite Patch Co., 1930 Marston Ave., Detroit, Mich. "Gas-O-Larm."

M-B—See Zim Accessories.

Mercury—See Rochester Mfg. Co.

Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich. "Ospeco."

New Standard Adding Machine Co., 3705 Forest Park Blvd., St. Louis, Mo. "Gasograph."

O. K. Lock Co., 264 Broadway, Buffalo, N. Y. "Buffalo."

Ospeco—See Michigan Auto Products Co.

Rochester Mfg. Co., 29-49 Halstead St., Rochester, N. Y. "Mercury," "Brighton," "Rocman."

Rocman—See Rochester Mfg. Co.

Roper & Co., C. F., Hopedale, Mass. "Dependo."

Standex, Inc., 341 E. Ohio St., Chicago, Ill.

Zim Accessories, 208 N. Wabash Ave., Chicago, Ill. "M. B."

GAGES, Limit

Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.

GTD—See Greenfield Tap & Die Corp.

Greenfield Tap & Die Corp., Greenfield, Mass. "GTD." (See page 927.)

Knapp Engineering Corp., Arthur, 19 W. 44th St., New York, N. Y. (See page 881.)

Lowry-Knise Tool Co., 241 W. Adams St., Syracuse, N. Y. "Syracuse."

Nichols, W. H., Waltham, Mass.

Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 339.)

Rogers Works, John M., ft. Monmouth St., Gloucester City, N. J.

Syracuse—See Lowry-Knise Tool Co.

Taft-Peirce Mfg. Co., Woonsocket, R. I. (See page 849.)

GAGES, Motorcycle Battery

Ammecup—See Motorcycle Appliance Co.

Motorcycle Appliance Co., 405 E. Fourth St., New York. "Ammecup."

GAGES, Oil, for Fords

(For indicating the amount of oil in the crank case)

Akuret—See Wallace Motor Products Corp.

American Automatic Devices Co., 515 W. Monroe St., Chicago, Ill. "Oilometer." (See page 643.)

Apco Mfg. Co., Providence, R. I.

Bell Pump & Mfg. Co., 534 E. Fort St., Detroit, Mich.

Benford Auto Products, Inc., Mt. Vernon, N. Y. "Monarch."

Billinger Mfg. Co, Saranac, Mich.

Bowen Products Corp., Auburn, N. Y. (See page 331.)

Buffalo—See O. K. Lock Co.

CB—See Cumings Bros.

Casco Mfg. Co., Thomasville, Ga. (Sole Distributors for Cooper Auto Supply Co., Thomasville, Ga.)

Cooper Auto Supply Co.—See Casco Mfg. Co.

Cumings Bros., 901-03 E. Saginaw St., Flint, Mich. "CB."

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.

Freeman Brass Works, 92 Bowery, New York, N. Y.

Gahm-McCormick Co., 906 E. Main St., Streator, Ill. (See page 1139.)

Henkelman Co., Chas. E., 2213-15 Pacific Ave., Atlantic City, N. J.

Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass. (See page 417.)

Ideal—See Worthington, A. P.

Illinois Brass Mfg. Co., 224-30 W. Ontario St., Chicago, Ill.

Lee Mfg. Co., 308 Ashley St., Ann Arbor, Mich. "Watch Dog."

M-B—See Zim Accessories.

Monarch—See Benford Auto Products, Inc.

Mosler & Co., A. R., Mt. Vernon, N. Y.

North Chicago Machine Co., Commonwealth Ave. & 22d St., North Chicago, Ill.

O. K. Lock Co., 264 Broadway, Buffalo, N. Y. "Buffalo."

Oilometer—See American Automatic Devices Co.

Thomas Andrews Corp., Waukegan, Ill. (See page 723.)

Universal Products Co., 908 W. Chicago Ave., Chicago, Ill.

Vaporator Mfg. Co., 2789 Washington Ave., St. Louis, Mo.

Wallace Motor Products Corp., 120 Broadway, New York, N. Y. "Akuret." (See page 771.)

Watch Dog—See Lee Mfg. Co.

Whitehouse Mfg. Co., 42 Elm St., Newark, N. J. (See page 637.)

Worthington, A. P., 700 N. Main St., Los Angeles, Cal. "Ideal."

Zim Accessories, 208 N. Wabash Ave., Chicago, Ill. "M-B."

GAGES, Oil Pressure

Foxboro Co., Neponset Ave., Foxboro, Mass.

Hancock Mfg. Co., 802 E. Henry St., Charlotte, Mich.

National Gauge & Equipment Co., La Crosse, Wis. (See page 437.)

Pierce, Butler & Pierce (Valve & Gage Division), 282 James St., Syracuse, N. Y.

United States Gauge Co., 37 Liberty St., New York, N. Y. (See page 441.)

Universal Products Co., 908 W. Chicago Ave., Chicago, Ill.

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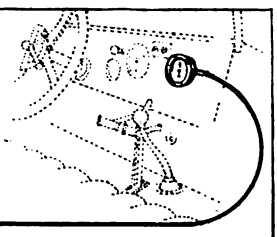
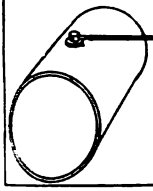
A practical Instrument directly before the eyes of the driver showing at all times the amount of gasoline in the tank. The SAFEGUARD of your peace of mind. You KNOW how much gasoline you have.





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GAGES, Plug and Ring

Ames Co., B. C., Ames St., Waltham, Mass.
Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
GTD—See Greenfield Tap & Die Corp.
General Tool Co., 1760 Main St., Buffalo, N. Y.
Greenfield Tap & Die Corp., Greenfield, Mass. "GTD." (See page 927.)
Johansson, C. E., Poughkeepsie, N. Y. (Importers.)
Knapp Engineering Corp., Arthur, 19 W. 44th St., New York, N. Y. (See page 881.)
Morse Twist Drill & Machine Co., 163 Pleasant St., New Bedford, Mass.
Nichols, W. H., Waltham, Mass.
Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 339.)
Rogers Works, John M., ft. Monmouth St., Gloucester City, N. J.
Taft-Peirce Mfg. Co., Woonsocket, R. I. (See page 849.)
West & Dodge Co. (Faniuel Sta.), Boston, Mass.
Wilton Machine Tool Co., 84 Linden Park St., Boston, Mass.

GAGES, PRESSURE—See Gages, Steam and Air; also Gages, Oil Pressure; also Gages, Tire Pressure

GAGES, PUMP—See Gages, Tire Pressure

GAGES, RING—See Gages, Plug and Ring

GAGES, Screw Pitch

Ames Co., B. C., Ames St., Waltham, Mass.
Arrow Tool Co., 220 Cannon St., Bridgeport, Conn.
Athol Machine Co., Athol, Mass.
Blodgett Mfg. Co., 248 Penn St., Rochester, N. Y.
Brown & Sharpe Mfg Co., Promenade St., Providence, R. I.
GTD—See Greenfield Tap & Die Corp.
General Tool Co., 1760 Main St., Buffalo, N. Y.
Goodell-Pratt Co., Greenfield, Mass.
Greenfield Tap & Die Corp., Greenfield, Mass. "GTD." (See page 927.)
Gulick-Henderson Co.—See Knapp Engineering Corp.
Knapp Engineering Corp., Arthur, 19 W. 44th St., New York, N. Y. (Sole Selling Agents for Gulick-Henderson Co., New York, N. Y.) (See page 881.)
Nichols, W. H., Waltham, Mass.
Perelstrous & Storms Tool Corp., 42 Broadway, New York, N. Y.
Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 339.)
Sheffield Machine & Tool Co., Dayton, O.
Starrett Co., L. S. Athol, Mass.
Union Tool Co., 48 E. River St., Orange, Mass.
West & Dodge Co. (Faniuel Sta.), Boston, Mass.

GAGES, Steam and Air

(Standard Pressure Gages)

American Steam Gauge & Valve Mfg. Co., 208-20 Camden St., Boston, Mass.
Ashton Valve Co., 161 First St. (Cambridge), Boston, Mass.
Belfield Co., H., 435 N. Broad St., Philadelphia, Pa.
Foxboro Co., Neponset Ave., Foxboro, Mass.
Improved Gauge Mfg. Co., 105 Canal St., Syracuse, N. Y. (See page 441.)
Marsh & Co., Jas. P., 118-24 S. Clinton St., Chicago, Ill.
Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill.
National Gauge & Equipment Co., La Crosse, Wis. (See page 437.)
Schaeffer & Budenberg Mfg. Co., 238 Berry St., Brooklyn, N. Y.
United States Gauge Co., 37 Liberty St., New York, N. Y. (See page 441.)

GAGES, Surface

Brown & Sharpe Mfg Co., Promenade St., Providence, R. I.
Dearborn Equipment Co., Kalamazoo, Mich. (See page 403.)
Goodell-Pratt Co., Greenfield, Mass.
Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 339.)
Starrett Co., L. S., Athol, Mass.
Wyke, J., South St., Wilmington, Mass

GAGES, TANK—See Gages, Aircraft Gasoline; also Gages, Gasoline Tank; also Gages, Vacuum Tank

GAGES, TANK, FOR FORDS—See Gages, Gasoline Tank

GAGES, Tire Pressure

(For indicating pressure in tires)

Allen Auto Specialty Co., 16 W. 61st St., New York, N. Y. "Tyrometer." (See page 323.)
American Sanitary Lock Co., 1072-80 S. East St., Indianapolis, Ind. "Pop-Off."
Apex Electric Mfg. Co., 1410 W. 59th St., Chicago, Ill.
Autoquip Mfg. Co., Rochester, N. Y. (See page 745.)
Barnard Specialty Co., 2300 Maple Ave., Los Angeles, Cal.
C&S—See Codman & Shurtleff.
Codman & Shurtleff, 120 Boylston St., Boston, Mass. "C&S."
Econ-o-cap—See Greist Mfg. Co.
Edelmann & Co., E., 2638 Crawford Ave., Chicago, Ill.
Goodrich Co., B. F., S. Main St., Akron, O.
Greist Mfg. Co., New Haven, Conn. "Econ-o-cap." (See page 1117.)
Hansen Mfg. Co., Cleveland, O. (See page 1041.)
Hill Pump Valve Co., Belmont & Knox Aves., Chicago, Ill. "Pneu-Meter."
Improved Gauge Mfg. Co., 105 Canal St., Syracuse, N. Y. (See page 441.)
Invincible—See United States Gauge Co.
Kellogg Mfg. Co., Rochester, N. Y. (See page 747.)
Lincoln Products Co., 161 Massachusetts Ave., Boston, Mass.
Mayo-Skinner Mfg. Co., 2115 Elston, Ave., Chicago, Ill.
Mead Engineering Co., 1133 Broadway, New York, N. Y.
Napco—See National Auto Products Co.
National Auto Products Co., 1780-82 Broadway, New York, N. Y. "Napco."
National Gauge & Equipment Co., La Crosse, Wis. (See page 437.)
Pierce, Butler & Pierce (Valve & Gage Division), 282 James St., Syracuse, N. Y.
Pneu-Meter—See Hill Pump Valve Co.
Pop-Off—See American Sanitary Lock Co.
Schrader's Son, A., Brooklyn, N. Y. (See page 768.)
Try Me Mfg. Co., Westfield, Mass.
Twitchell Gauge Co., 1516 S. Wabash Ave., Chicago, Ill. (See page 473.)
Tyrometer—See Allen Auto Specialty Co.
United States Gauge Co., 37 Liberty St., New York, N. Y. "Invincible." (See page 441.)

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GAGES, Vacuum Tank

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Vacuumeter Sales Corp., Knoxville, Tenn.

GAGES, Water Circulation

(For indicating pressure in water cooling systems)

Ashton Valve Co., 161 First St. (Cambridge), Boston, Mass.

Foxboro Co., Neponset Ave., Foxboro, Mass.

Improved Gauge Mfg. Co., 105 Canal St., Syracuse, N. Y. (See page 441.)

Schaeffer & Budenberg Mfg. Co., 338 Berry St., Brooklyn, N. Y.

GAGES, Wheel Aligning

(For indicating or testing the alignment of front wheels)

Duby, J. F., 11 River St. Mattapan, Mass. (See page 729.)

Mechanical Utilities Corp., 5 N. La Salle St., Chicago, Ill.

Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 735.)

GAGES, WIRE—See Gages, Drill and Wire

GALVANIZING, Sherardizing and Rust-Proofing

American Tap Bush Co., 1174 E. Jefferson Ave., Detroit, Mich.

American Tube & Stamping Co., Bridgeport, Conn.

Buffalo Galvanizing & Tinning Works, 49-53 Jackson St., Buffalo, N. Y.

Chain Products Co., 3924 Cooper Ave., Cleveland, O.

Cramp & Sons Ship & Engine Bldg. Co., William, Philadelphia, Pa. (See page 209.)

Dover Stamping & Mfg. Co., 385 Putnam Ave., Cambridge, Mass. (See page 483.)

Fore River Shipbuilding Corp., Quincy, Mass.

Galvanizing Corp. of America, 244-52 Eagle St., Brooklyn, N. Y.

Geuder, Paeschke & Frey Co., 1365-1700 St. Paul Ave., Milwaukee, Wis. (See page 949.)

Globe Machine & Stamping Co., 1200-50 W. 76th St., Cleveland, O. (See page 1049.)

Grabler Mfg. Co., Cleveland, O.

Maforco—See Market Forge Co.

Malleable Iron Fittings Co., Branford, Conn. (See page 245.)

Manitowoc Plating Works, 24th & Franklin Sts., Manitowoc, Wis.

Market Forge Co., Garvey St. & Blvd., Everett, Mass. "Maforco."

Meaker Galvanizing Co., 1249 Fulton St., Chicago, Ill.

Mohegan Tube Co., 306 Scott Ave., Brooklyn, N. Y. (See page 1145.)

National Galvanizing Co., 1918-26 Carroll Ave., Chicago, Ill.

New Haven Sherardizing Co., 868 Windsor St., Hartford, Conn.

Ohio Sherardizing Co., 1101 Power Ave., Cleveland, O.

Rockford Metal Specialty Co., 720 S. Main St., Rockford, Ill.

Scott, C. U., 1340 Second Ave., Davenport, Ia.

Stanley Works, New Britain, Conn. (See page 499.)

U. S. Electro-Galvanizing Co., 278-84 Park Ave., Brooklyn, N. Y.

Wise Electro Sherardizing Co., 6320 E. Fort St., Detroit, Mich.

GAPS, Spark

(Auxiliary Spark Gaps, Intensifiers or Indicators)

All-Spark Ignition Co., 13 Water St., New York, N. Y.

American Automatic Devices Co., 515 W. Monroe St., Chicago, Ill. "Visible." (See page 643.)

Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. "Willspark." (See page 81.)

Auto Spark Indicator Co., 250 Devonshire St., Boston, Mass.

Automotive Material Co., Chicago, Ill. "Automat-Co." (See page 1117.)

Bigelow—See Universal Mfg. & Sales Co.

Bingham Perfected Spark Plug Co., 324 Mulberry St., Rockford, Ill. (See page 1219.)

Brosnan Co., Springfield, Mass.

Bunch & Co., Marshall, Mo. "Gottospark."

Chance Co., Centralia, Mo. "Sparklets."

Colby Co., G. E., 2-6 N. Eighth Ave., Maywood, Ill. "For-Do."

Delco Mfg. Co., 414 Wainwright Blvd., St. Louis, Mo.

Durham Co., P. J., 244 W. 49th St., New York, N. Y. (See page 531.)

Emo Laboratories, 2255 N. Illinois St., Indianapolis, Ind.

For-Do—See Colby Co.

Fry Mfg. Co., S. 1024 Perry St., Spokane, Wash.

Geoffroy—See General Machine Co.

General Machine Co., 227 Eddy St., Providence, R. I. "Geoffroy."

Gottospark—See Bunch & Co.

Guaranty Motors Co., Cambridge, Mass. (See page 471.)

H. E. C.—See Hercules Electric Corp.

Harrington Co., O. C., 4138 Fillmore St., Chicago, Ill.

Hartenstein, R. P., 542 S. Dearborn St., Chicago, Ill. "Utility."

Hercules Electric Corp., 25 Blue Hill Ave., Roxbury, Mass. "H. E. C."

Herz, 182 Locust Ave., New York, N. Y. "Oscillum." (See page 713.)

Instanto—See Jackson & Co.

Jackson & Co., 189 N. Clark St., Chicago, Ill. "Instanto."

Jubilee Mfg. Co., 1929 S. 20th St., Omaha, Neb.

Marvel—See Universal Mfg. & Sales Co.

Meyer Auto Accessory Co., 767-71 20th St., Detroit, Mich.

Modern Tool & Stamping Co., 311-17 S. Clinton St., Chicago, Ill.

Motor Economy Co., Cincinnati, O. "Sure-Fire."

Oscillum—See Herz.

Pittsburgh Electric Specialties Co., 396 Broadway, New York, N. Y.

Plug Test Co., 733 Broad St., Newark, N. J. "Simplex."

Power Spark Intensifier Co., Watertown, S. Dak.

Pronto Mfg. & Sales Co., 706 S. 24th St., Omaha, Neb.

Reschke Machine Works Co., 908 N. Washington Ave., Wichita, Kans.

Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. (See pages 129, 151, 325 and 327.)

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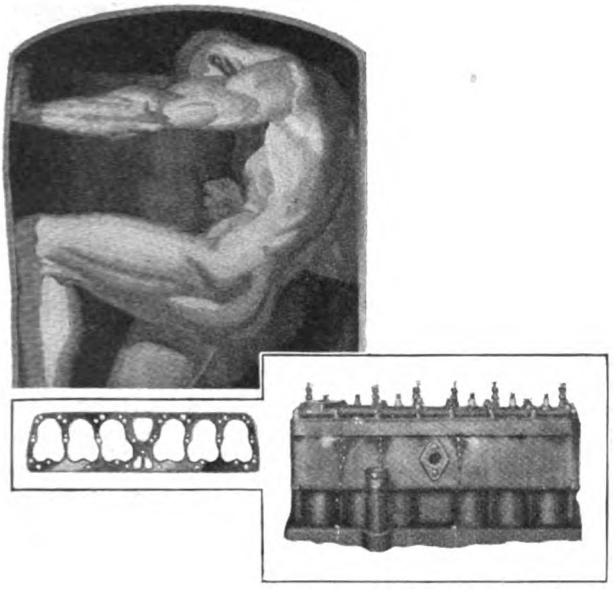

Small illustration shows what happens when inferior gaskets are used.

Note to Repair Men: The best engineering authorities specify that a new gasket be used each time the motor head is removed. By doing this you insure against oil, water, and compression leaks, and add an extra profit to every job.

Victor Gaskets Hold Compression

Victor copper asbestos cylinder head gaskets withstand the terrific pressure caused by the explosion in the cylinders.

The power is confined and directed to the driving parts without loss.

Victor gaskets are accurately made of the best materials by skilled workmen to hold this compression under all conditions.

In the Victor line there are nearly 400 types of cylinder head gaskets and more than 4,000 other types.

Jobbers and dealers thus have at their command a complete assortment for every motor need.

VICTOR MANUFACTURING & GASKET CO.

World's Largest Gasket Manufacturers

5750 Roosevelt Road **CHICAGO, ILLINOIS**

VICTOR

COPPER~ASBESTOS

GASKETS

The World's Standard Gaskets

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GAPS, Spark (Continued)

Rutledge Repair & Engr. Co., Uel Alvin, 1407 E. Tenth St., Charlotte, N. C.

Scott Corp., 1534 W. Lake St., Chicago, Ill.

Simplex—See Plug Test Co.

Smith & Gunn, 22-26 E. Broad St., Burlington, N. J.

Sparklets—See Chance Co.

Sparko-Gap Co., 54 W. 39th St., New York, N. Y. (See page 1097.)

Sure-Fire—See Motor Economy Co.

Universal Mfg. & Sales Co., 550 W. Harrison St., Chicago, Ill. "Marvel," "Bigelow."

Utility—See Hartenstein, R. P.

Viktry Sales Co., 389 Fifth Street, Milwaukee, Wis. (See page 770.)

Visible—See American Automatic Devices Co.

Willspark—See Armand Machine Works.

Wizard Arc Spark Plug Co., Wainwright Bldg., St. Louis, Mo.

X-Ray Plug Detector Co., Pleasant Lake, Ind.

GARAGE AIR COMPRESSORS—See Compressors, Garage Air

GARAGE CANS—See Cans, Gasoline

GARAGE DOOR HANGERS—See Hangers and Hinges, Garage Door

GARAGE DOOR HINGES—See Hangers and Hinges, Garage Door

GARAGE DOOR HOLDERS—See Holders and Openers, Garage Door

GARAGE DOOR OPENERS—See Holders and Openers, Garage Door; also Openers, Electric Garage Door

GARAGE DOORS—See Doors, Special Garage

GARAGE ELEVATORS — See Elevators, Garage

GARAGE GASOLINE PUMPS—See Tanks, Gasoline Storage

GARAGE GREASE GUNS—See Guns, Portable Garage Grease

GARAGE HEATERS—See Heaters, Special Garage

GARAGE JACKS—See Jacks, Special

GARAGE TIRE PUMPS—See Compressors, Garage Air

GARAGES, Portable

Aladdin Co., Bay City, Mich.

Anchor Corrugating Construction Co., 140 Washington St., New York, N. Y.

Ashley Steel Building Co., 1790 Broadway, New York, N. Y. "National."

Bossert & Sons, Louis, Grand St. & Newtown Creek, Brooklyn, N. Y.

Brooks-Skinner Co., 10-50 Bridge St., North Weymouth, Mass.

Butler Mfg. Co., 1324 Grand Ave., Kansas City, Mo. "Round Ruff."

Canton Metal Ceiling Co., 2100 Harrison Ave., S. W., Canton, O.

Case Mfg. Co., 214-16 N. Mechanic St., Jackson, Mich.

Catherman, J. A., Beaver Springs, Pa.

Chesbro-Whitman Co., 1167 First Ave., New York, N. Y.

Davis-Watson Mfg. Co., 9-11 Foundry St., Nashua, N. H.

Diamond Hardware Mfg. Co., 224 Fourth Ave., Pittsburgh, Pa.

Dougal, W. M., 1410 G St., Washington, D. C.

Dow Wire & Iron Works, Louisville, Ky. (See page 157.)

Easibilt—See Hyde Park Lumber Co.

Eslien Sheet Metal Works, 1001 30th St., Milwaukee, Wis.

Fargo Cornice & Ornament Co., 1002-04 Front St., Fargo, N. Dak. "Rusk."

Farrar Lumber Co., Dalton, Ga.

Fouts Co., C. C., Middletown, O.

Garage Construction Co. of Pittsburgh, Oliver Ave. & Grant St., Pittsburgh, Pa.

Gold Bond—See Mershon & Morley Co.

Gordon Mfg. Co., Middletown, O.

Greis Co., Andrew, 335-37 W. 19th St., New York, N. Y.

Harris, McHenry & Baker Co., Elmira, N. Y. "Simplex."

Harry Steel Co., O. K., 2233-35 Papin St., St Louis, Mo.

Hoboken Garage Mfg. Co., 74 Bloomfield St., Hoboken, N. J.

Hodgson Co., E. F., 71 Federal St., Boston, Mass. "Wigwam."

Huttig Sash & Door Co., 1206 S. Vandeventer Ave., St. Louis, Mo.

Hyde Park Lumber Co., Burch Ave. & N. & W. R. R., Cincinnati, O. "Easibilt."

Karr Portable House Co., 2554 W. Irving Park Blvd., Chicago, Ill.

Knapp Portable-Permanent Building System, 335 Broadway, New York, N. Y.

Kolb Bldg. Co., 30 Church St., New York, N. Y.

Lewis Mfg. Co., 23rd St. & Michigan Ave., Bay City, Mich.

Liberty Steel Products Co., 222 Michigan St., Chicago, Ill. (Sole Distributors for Steel Fabricating Co., Chicago Heights, Ill. "Stefco.")

Manchester Mfg. Co., 1210 S. Vandeventer Ave., St. Louis, Mo.

Mecco—See Moeschl-Edwards Corrugating Co

Mershon & Morley Co., Saginaw, Mich. "Gold Bond."

Metal Shelter Co., 50 Church St., New York, N. Y. "Pruden."

Miller Mfg. Co., 3000 Alabama Ave., St. Louis, Mo.

Millmade Construction Co., Portland, Ore.

Moeschl-Edwards Corrugating Co., Eighth & Ninth Sts., Covington, Ky. "Mecco."

Moister & Co., M., 3931 N. Fifth St., Philadelphia, Pa.

National—See Ashley Steel Building Co.

Newport Rolling Mill Co., Newport, Ky.

Pinyoun & Son, F. C., 2526 Carnegie Ave., Cleveland, O.

Pro-Slate Panel Buildings, 76th & Laflin Sts., Chicago, Ill.

Pruden—See Metal Shelter Co.

Pruden Co., C. D., Warner, Dock & Bayard Sts., Baltimore, Md. "Prudential," "Quixet."

Prudential—See Pruden Co.

Quixet—See Pruden Co.

Riverside Mfg. Co. 162-66 Riverside Ave., Newark, N. J.

Round Ruff—See Butler Mfg. Co.

Rusk—See Fargo Cornice & Ornament Co.

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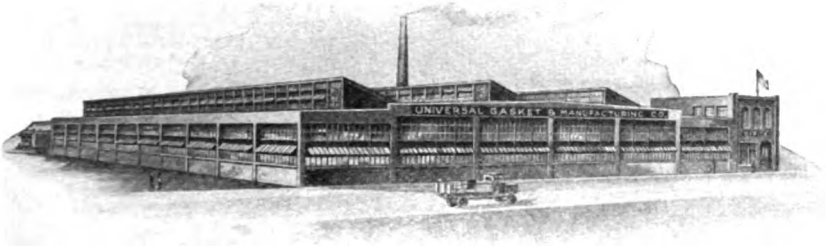
Our New Home



This new daylight plant, its up-to-date machinery, our large stocks of raw materials, and our careful yet economical method of handling and inspecting raw materials and finished product, are the reasons behind the uniform high quality and quick delivery of

Universal UNIVERSAL COPPER ASBESTOS GASKETS **Gaskets**

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Leader News Bldg., Cleveland, Ohio

Factory and General Offices
2901 S. 48th Avenue
Cicero, Illinois
Suburb of Chicago

Flint P. Smith Bldg., Flint, Mich.

Pontiac Bldg., St. Louis, Mo.

Export—Kellers Inc., Otis Bldg., Philadelphia, Pa.

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GARAGES, Portable (Continued)

St. Johns Portable Building Co., St. Johns, Mich.

Scholes Bros., 1241 Rosedale St., N. S., Pittsburgh, Pa.

Sheet Metal Products Co., Duluth, Minn.

Simplex—See Harris, McHenry & Baker Co.

Skinner Co., Brooks, 10-38 Bridge St., North Weymouth, Mass.

Springfield—See Thayer Portable House Co.

Steel Fabricating Co.—See Liberty Steel Products Co.

Stefco—See Liberty Steel Products Co.

Taylor Mfg. Co., 219 Glenridge Ave., Montclair, N. J.

Thayer Portable House Co., Ralston St., Keene, N. H. "Springfield."

Togan-Stiles Co., Grand Rapids, Mich.

Truscon Steel Co., Albert St., Youngstown, O.

U. S. Portable Building Co., 115 Broadway, New York, N. Y.

Wigwam—See Hodgson Co.

GAS BAGS—See Bags, Rubber Gas

GAS BURNERS—See Burners, Acetylene

GAS GENERATORS — See Generators, Acetylene

GAS LAMPS—See Lamps, Acetylene

GAS PLIERS—See Pliers, Combination

GAS PRODUCERS, MOTOR BOAT—See Producers, Motor Boat Gas

GAS PURIFIERS—See Purifiers, Acetylene Gas

GAS TANK KEYS—See Keys, Acetylene

GAS TANKS—See Tanks, Acetylene

GAS TUBING CONNECTIONS—See Connections, Gas Tubing

GASKET CEMENT—See Cement, Gasket

GASKET CUTTERS—See Cutters, Washer or Gasket

GASKET DISPLAY BOARDS—See Boards, Gasket Display

GASKET SHELLAC—See Cement, Gasket

GASKETS, ASBESTOS—See Packing, Asbestos

GASKETS, COMPOSITION—See Packing

GASKETS, COPPER—See Gaskets, Metallic

GASKETS, COPPER, FOR FORDS—See Gaskets, Cylinder Head

GASKETS, CORK—See Washers, Cork

GASKETS, Cork, for Fords

Acco—See Armstrong Cork Co.

Advance Felt & Cutting Co., 315E S. Jefferson St., Chicago, Ill. (See page 411.)

Armstrong Cork Co., 12 23rd St., Pittsburgh, Pa. "Acco." (See page 449.)

Compressed Cork Co., Ossining, N. Y. (See page 675.)

Field & Co., R. B., Worcester, Mass. "Fieldco." (See page 1055.)

Fieldco—See Field & Co.

GASKETS, Cylinder Head and Valve Cap, for Fords

(Copper—Asbestos Gaskets)

Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for "McKim" and "Never-Leak" Gaskets.) (See page 125.)

Fieldco—See Field & Co.

Fitzgerald Mfg. Co., Torrington, Conn. "Never-Leak." (See page 451.)

McCord Mfg. Co., Detroit, Mich. "McKim." (See pages 784 and 785.)

McKim—See McCord Mfg. Co.

Never-Leak—See Fitzgerald Mfg. Co.

Universal Gasket & Mfg. Co., 2901 S. 48th St., Cicero, Ill. (See page 445.)

Victor Mfg. & Gasket Co., 5750 Roosevelt Rd., Chicago, Ill. (See page 443.)

GASKETS, FELT—See Washers, Felt

GASKETS, Felt, for Fords

Advance Felt & Cutting Co., 315E S. Jefferson St., Chicago, Ill. (See page 411.)

Algco—See Auburn Leather Goods Co.

Atlantic Felt Cutting Co., 93rd St., & Fourth Ave., Brooklyn, N. Y. (See page 413.)

Auburn Leather Goods Co., 3 Miller St., Auburn, N. Y. "Algco."

Booth Felt Co., 463-73 19th St., Brooklyn, N. Y. (See pages 409 and 410.)

Brawley, T. R., 275-77 20th St., Brooklyn, N. Y. "Rounds." (See pages 411 and 1053.)

Felt Products Mfg. Co., 2419 W. 14th, Chicago, Ill.

Felters Co., Millbury, Mass. (See page 649.)

Field & Co., R. B., Worcester, Mass. "Fieldco." (See page 1055.)

Lyons Felt Co., Dept. A., 338 Myrtle Ave., Brooklyn, N. Y. (See page 475.)

Rhocom—See Rhodes & Co.

Rhodes & Co., James H., 513 W. Austin Ave., Chicago, Ill. "Rhocom."

Rounds—See Brawley, T. R.

GASKETS, FIBRE—See Fibre, Hard

GASKETS, FIBROUS — See Packing, Asbestos

GASKETS, Metallic

(Copper and Copper-Asbestos)

Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for "McKim" and "Never-Leak" Gaskets.) (See page 125.)

Evertight—See Gasket Co. of America.

Faw, J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributor for "Never-Leak" Gaskets.) (See page 241.)

Fitzgerald Mfg. Co., Torrington, Conn. "Never-Leak." (See page 451.)

Gasket Co. of America, 525 W. Van Buren St., Chicago, Ill. "Kantleak," "Evertight."

Gasket Supply Co., 1728 Ludlow St., Philadelphia, Pa. "Right." (See page 447.)

Guillot Gasket Mfg. Co., Wm., 2922 Belmont Ave., Chicago, Ill.

Kantleak—See Gasket Co. of America.

McCord Mfg. Co., Detroit, Mich. "McKim." (See pages 784 and 785.)

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The Gasket Supply Company

Manufacturers of

"Right" Gaskets and Sheet Packings, "Gasco" Piston Packing, also Stampings, Punches and Dies

1728 Ludlow Street Philadelphia, Pennsylvania

"Right" Gaskets

copper	asbestos
steel	rubber
brass	paper
lead	fibre

We are specialists in the manufacture of gaskets and will make your gaskets according to your specifications.

"Right" Gaskets prevent power losses and oil and gas leaks by making and maintaining a perfectly tight joint under any pressure.

Made for Automobiles, Gas Engines, Locomotives, High Pressure and Super-heated Steam conditions and for other system requirements.

Gasco Packing

THE GASKET SUPPLY CO. TRADE GASCO MARK PHILADELPHIA, PA. U.S.A.

Made in all other materials in Sheets, Rings, Spirals, Coils, Tucks and Millboard forms.

asbestos	flax
rubber	canvas
leather	compositions

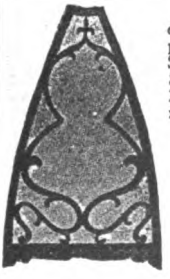
Made for steam, gas, water, acids, brine, ammonia, oils and other purposes in thicknesses suitable for any purpose.

Right Brand Washers

asbestos	leather
aluminum	mica
bronze	paper
brass	zinc
cork	millboard
cardboard	rubber
copper duck	steel
fibre	rawhide
felt	Monel metal
iron	tin
lead	wood

We make "Right" Brand Felt Washers and strips for oil and grease packings and for automobiles, any shape, size, thickness or degree of hardness.

Metal Stampings



We are thoroughly equipped for quantity production of Metal Stampings in Brass, Steel, Copper, Lead, Zinc and other metals.

Our facilities enable us to handle the stamping of all parts requiring up to 100 tons pressure.

If you need any kind of Stamping, Shaping, Forming, Bending, Drawing or Piercing work done, let us quote our prices.

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McKim—See McCord Mfg. Co.
Mikesell Brothers Co., 176-78 N. La Salle St., Chicago, Ill. (See page 297.)
Never-Leak—See Fitzgerald Mfg. Co.

GASKETS, Metallic (Continued)

Phoenix Specialty Mfg. Co., 43-50 Duane St., New York, N. Y.
Right—See Gasket Supply Co.
United States Indestructible Gasket Co., 50 Church St., New York, N. Y.
Universal Gasket & Mfg. Co., 2901 S. 48th Ave., Cicero, Ill. (See page 445.)
Victor Mfg. & Gasket Co., 5750 Roosevelt Rd., Chicago, Ill. (See page 443.)

GASKETS, METALLIC, FOR FORDS—See Gaskets, Cylinder Head

GASKETS, RUBBER—See Packing, Rubber

GASKETS, VALVE CAP—See Gaskets, Metallic

GASKETS, VALVE CAP, FOR FORDS—See Gaskets, Cylinder Head

GASOLINE, Automobile

American Oil Co., American Bldg., Baltimore, Md. "Amoco."
Amoco—See American Oil Co.
B-Zol—See Koppers Products Co.
Emlenton Refining Co., Emlenton, Pa.
Energine Refining & Mfg. Co., The Arcade, Cleveland, O.
Gulf Refining Co., Pittsburgh, Pa.
Koppers Products Co., 356 Union Arcade, Pittsburgh, Pa. "B-Zol."
Keystone—See Tiona Refining Co.
National Refining Co., Rose Bldg., Cleveland, O. "White Rose."
Petroleum Products Co., 39th St. & B. & O. R. R., Pittsburgh, Pa. "Vigorite."
Petroleum Refining Co., Latonia, Ky.
Powero—See Tide Water Oil Co.
Pure Oil Co., Fifth & Chestnut Sts., Philadelphia, Pa.
Socony—See Standard Oil Co. of N. Y.
Sloane & Zook, 101 Main St., Bradford, Pa.
Standard Oil Co. of N. Y., 26 Broadway, New York, N. Y. "Socony."
Sterling Oil Corp., 608 Swan St., Buffalo, N. Y. "X-Tra."
Texaco—See Texas Co.
Texas Co., 17 Battery Pl., New York, N. Y. "Texaco."
Tide Water Oil Sales Corp., 11 Broadway, New York, N. Y. "Tydol," "Powero." (See page 667.)
Tiona Refining Co., Madison Ave. & Belt. Ry., Indianapolis, Ind. "Keystone."
Tydol—See Tide Water Oil Co.
Uller, C. C., Tidioute, Pa.
Union Oil Co. of California, Union Oil Bldg., Los Angeles, Cal.
Ventura Refining Co., 458 S. Spring St., Los Angeles, Cal.
Vigorite—See Petroleum Products Co.
Waverly Oil Works Co., Pittsburgh, Pa. (See page 663.)
White Rose—See National Refining Co.
X-Tra—See Sterling Oil Corp.

GASOLINE BURNERS—See Burners, Gasoline

GASOLINE CANS—See Cans, Gasoline

GASOLINE CARBURETERS—See Carbureters, Gasoline

GASOLINE COCK CONTROL RODS FOR FORDS—See Rods, Gasoline Cock Control

GASOLINE COCKS—See Cocks, Standard Pet; also Cocks, Spring Key

GASOLINE CONSUMPTION METERS—See Gages, Vacuum Tank

GASOLINE ECONOMIZERS—See Mixers, Economizers or Agitators and Auxiliary Air Valves

GASOLINE ENGINE GOVERNORS—See Governors, Gasoline Engine

GASOLINE ENGINE INDICATORS—See Indicators, Gasoline Engine

GASOLINE ENGINES—See Engines, Gasoline

GASOLINE FEED PUMPS—See Systems, Magnetic Pump

GASOLINE FEED SYSTEMS—See Systems, Magnetic Pump Gasoline; also Tanks, Vacuum; also, Regulators, Tank Pressure

GASOLINE FUNNELS—See Funnels, Metal

GASOLINE FURNACES—See Torches, Gasoline

GASOLINE GAGES—See Gages

GASOLINE LOCK VALVES—See Valves, Gasoline Lock

GASOLINE MIXERS — See Mixers, Economizers or Agitators, Fuel

GASOLINE MOTORS—See Engines, Gasoline

GASOLINE PUMPS—See Tanks and Systems, Gasoline

GASOLINE PURIFIERS—See Strainers or Separators, Gasoline

GASOLINE RESERVE COCKS — See Valves, Two Way Tank

GASOLINE RESERVE COCKS FOR FORDS —See Cocks, Fuel Supply

GASOLINE RESERVE VALVES — See Valves, Two Way Tank

GASOLINE RESERVE VALVES FOR FORDS—See Cocks, Fuel Supply

GASOLINE SAVERS—See Mixers, Economizers or Agitators, Fuel

GASOLINE SEPARATORS—See Strainers, Gasoline

GASOLINE STARTERS—See Starters, Gasoline

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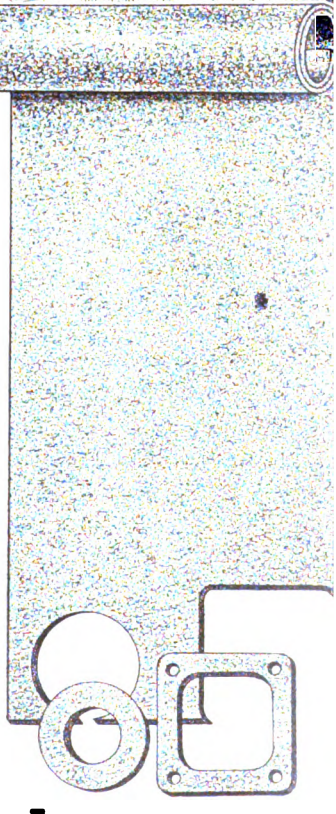
Cork—
the Natural Gasket Material

Careful repairmen use Acco Cork because it satisfies all the requirements of an efficient gasket material:

1. It is resilient and requires only moderate pressure to insure tight joints.
2. It is non-absorbent and provides an effective barrier against leaks.
3. It is easily cut and is especially convenient to use where quick service is required.
4. It is durable and gives longer and much more satisfactory service.

Joints that leak are inefficient and unsightly, and nine times out of ten the car owner attributes them to faulty workmanship. Can you afford to take a chance on losing a customer when Acco Cork Gaskets will eliminate all cause for complaint on this score.

For general repair work Acco Cork is supplied in sheets, 12 x 36 inches, 1/16, 3/32 and 1/8 inch thick. For Ford cars, Acco Cork Gaskets and Washers are packed in dust-proof boxes containing complete sets, or ten gaskets of any one shape.



Samples and Prices Cheerfully Supplied on Request

Armstrong Cork Company
124 Twenty-Third Street, Pittsburgh, Pa.

Acco Cork
For Gaskets and Washers

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GASOLINE STORAGE SYSTEMS — See Tanks and Systems, Gasoline Storage

GASOLINE STORAGE TANKS — See Tanks and Systems, Gasoline Storage

GASOLINE STRAINERS—See Strainers, Gasoline

GASOLINE SYSTEMS, FEED—See Systems, Magnetic Pump Gasoline; also Tanks, Vacuum

GASOLINE TANK GAGES — See Gages, Gasoline

GASOLINE TANKS—See Tanks, Emergency; also Tanks, Fuel; also Tanks and Systems

GASOLINE TESTERS—See Hydrometers

GASOLINE TORCHES—See Torches, Gasoline

GASOLINE TREATING COMPOUNDS—See Compounds, Gasoline Treating

GATE FASTENERS, TRUCK BODY—See Fasteners, Truck Body Gate

GAUGES—See Gages

GAUNTLETS, MOTORISTS' — See Gloves, Motorists'

GEAR BLANKS—See Gears, Blank

GEAR CHECKS — See Checks, Steering Gear

GEAR COMPOUNDS — See Greases, Cup and Gear

GEAR CUTTING—See Gears and Pinions; also Machine Work

GEAR CUTTING MACHINES—See Machines, Gear Cutting

GEAR GREASES—See Greases, Cup

GEAR HOBBING MACHINES — See Machines, Gear Hobbing

GEAR PULLERS—See Pullers, Gear and Wheel

GEAR RIVETING JIGS FOR FORDS—See Jigs, Triple Gear Riveting

GEAR SHIFT EXTENSIONS — See Extensions, Gear Shift Lever

GEAR SHIFT LEVER BALLS—See Balls, Composition Control Lever

GEAR SHIFTERS—See Shifters, Automatic Gear

GEAR STOPS, STEERING — See Stops, Steering Gear

GEAR TESTING INSTRUMENTS—See Instruments, Gear Testing

GEAR TOOTH CHAMFERING MACHINES —See Machines, Gear Tooth Chamfering

GEARS, Auxiliary Transmission, for Fords

Alling-Lander Co., Basket St., Sodus, N. Y.

Beirlein Syndicate, 1148 S. Los Angeles St., Los Angeles, Cal. "Langbein."

Broadway Tool & Machine Co., 717 Livingston St., Elizabeth, N. J.

Cronk, E. D. & A. F., 130 Hotel St., Utica, N. Y. "Simplex."

Hess-Scott—See Western Truck Attachment Co.

Holland Machine Co., 132 Water St., South Norwalk, Conn.

Kellenberger Transmission Co., Old National Bank Bldg., Spokane, Wash.

Langbein—See Beirlein Syndicate.

Laurel Motors Corp., Anderson, Ind. (See page 1179.)

Moore—See Tractor-Train Co.

Perfecto Gear Differential Co., 2608 King St., Bellingham, Wash.

Simplex—See Cronk, E. D. & A. F.

Tractor-Train Co., 1344 Wall St., Los Angeles, Cal. "Moore." (See page 1137.)

Western Truck Attachment Co., 1510 11th Ave., Seattle, Wash. "Hess-Scott."

Woodward & Rowe, 222 Van Ness Ave., San Francisco, Cal.

GEARS, Blank

(See also Forgings; also Castings; for Fiber Gear Blanks—See Fibre, Hard)

Albaugh-Dover Co., 2100 Marshall Blvd., Chicago, Ill.

American Welding & Mfg. Co., Griswold St., Warren, O.

Ashley Machine Works, 724 University Ave., Rochester, N. Y.

Capitol—See Washington Steel & Ordnance Co.

Clapp Mfg. Co., E. D., 305 W. Genesee St., Auburn, N Y.

Columbus Forge & Iron Co., Columbus, O. (See page 425.)

Detroit Screw Works, 1494 Franklin St., Detroit, Mich.

Electro Steel Co., Pittsburgh, Pa.

Ford Speed-Power Equipment Mfrs., 250 W. 54th St., New York, N. Y.

Ganschow Co., Wm., 1001-05 Washington Blvd., Chicago, Ill. (See page 1239.)

Gill & Sons Forge & Machine Works, P. H., Lorraine & Otsego Sts., Brooklyn, N. Y.

Hartford Machine Screw Co., Hartford, Conn. (See page 839.)

Jefferson Forge Products Co., 12341 E. Jefferson Ave., Detroit, Mich.

Ladish Drop Forge Co., Cudahy, Wis. (See page 423.)

Link-Belt Co., Indianapolis, Ind. (See page 235.)

Machinery Forging Co., 5450 Hamilton Ave., Cleveland, O.

McDougall & Potter Co., 606-12 W. 55th St., New York, N. Y.

McInnes Steel Co., Corry, Pa.

Michigan Screw Co., 506 S. Hosmer St., Lansing, Mich.

New England Forge Co., 9 Plymouth St., Worcester, Mass.

Nilson-Miller Co., 1300-06 Hudson St., Hoboken, N. J.

Non-Ferrous Alloys Co., 8162 W. Fort St., Detroit, Mich.

Pan Motor Co., St. Cloud, Minn.

Savage Arms Corp., Sharon, Pa.

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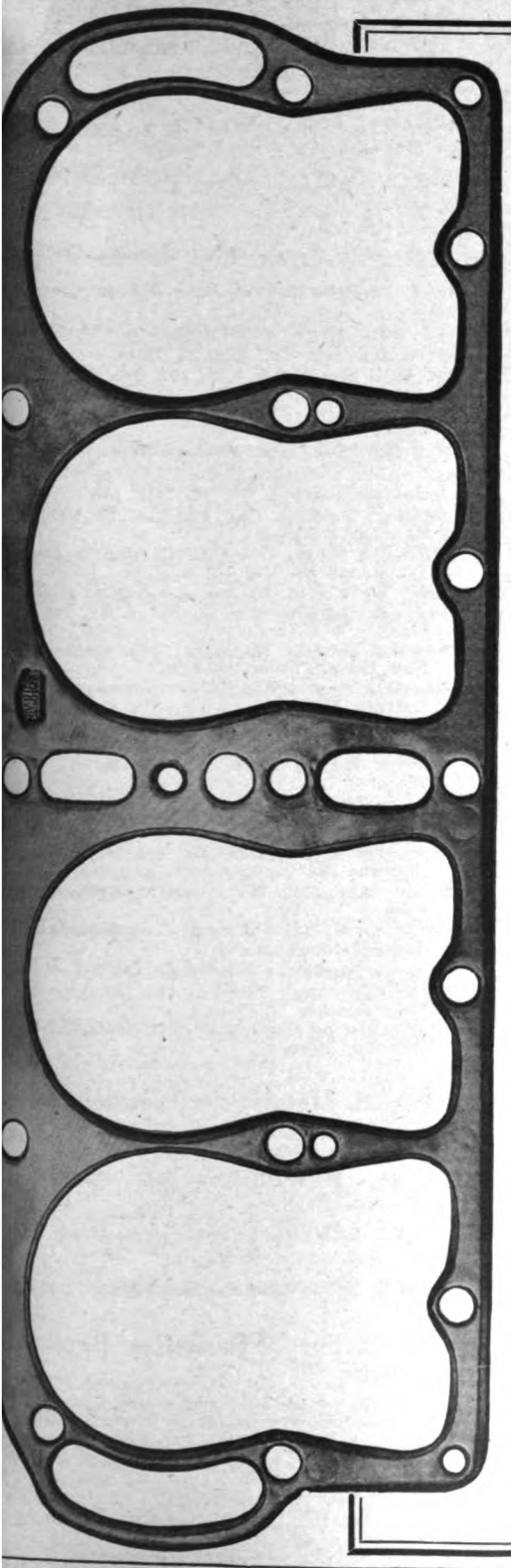

An Important Improvement

in

CYLINDER HEAD GASKETS

We are introducing to the trade a gasket for Ford engines, embodying a new principle in gasket construction—**putting the binding on the outer edge**—as is shown in the illustration.

This new principle improves the construction of the gasket to a wonderful extent, as it prevents blowouts where they occur in 75 per cent. of the ordinary gaskets—around the outer edges.

Bottom layer of gasket pure Lake Copper .010 gauge, with a layer of long fibre asbestos.

Insert plate of special copperized metal that severest tests have proven much better than copper.

Write us TODAY for Sample Gasket, Prices, etc.

The Fitzgerald Mfg. Co.
TORRINGTON, CONN.

Never-Leak Gaskets

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GEARS, Blank (Continued)

Steel Forgings Co., Brotherton Rd., Cincinnati, O.
Washington Steel & Ordnance Co., Washington, D. C. "Capitol."
Western Automatic Machine Screw Co., Elyria, O. (See page 659.)
Wyman-Gordon, Worcester, Mass. (See Backbone.)

GEARS, Differential

(Complete Differential Units)

Adco—See American Die & Tool Co.
Adler Mfg. Co., 2407-11 Ohio St., Chicago, Ill.
Allen—See East Iron & Machine Co.
American Die & Tool Co., Reading, Pa., "Adco." (See page 991.)
Badger—See Lewis Differential Co.
Brown-Lipe-Chapin Co., Syracuse, N. Y. (See page 597.)
Cotta Transmission Co., 2340 11th St., Rockford, Ill.
Crofoot Gear Works, Hyde Park Ave., at Readville, Boston, Mass. (See page 641.)
Cross Gear & Engine Co., 3260 Bellevue Ave., Detroit, Mich. (See page 1191.)
Cullman Wheel Co., 1356 Altgeld St., Chicago, Ill. (See page 1155.)
Dorr-Miller—See Forest City Machine & Forge Co.
East Iron & Machine Co., E. Market St., Lima, O. "Allen."
Elberts—See Everitt Co.
Everitt Co., B. F., 294 E. Jefferson Ave., Detroit, Mich. "Elberts."
Fairfield Mfg. Co., Wallace Ave. & Belt Line, Lafayette, Ind.
Forest City Machine & Forge Co., 5101 Lakeside Ave., N. E., Cleveland, O. "Dorr-Miller."
Frost Gear & Forge Co., Jackson, Mich. (See page 425.)
Jones Gear Co., 965 Wayside Rd., Cleveland, O.
Lewis Differential Co., 121 Huron St., Milwaukee, Wis. "Badger."
New Process Gear Corp., Syracuse, N. Y. (See page 459.)
Powrlok Co., 1107 E. 152nd St., Cleveland, O.
Russel Motor Axle Co., North Detroit, Mich.
Standard Equipment Co., Lorain Ave. & W. 100th St., Cleveland, O.
Van Dorn & Dutton Co., Cleveland, O.
Warner Gear Co., Muncie, Ind. (See page 457.)
Warner Mfg. Co., Toledo, O.
Warren Machine Products Co., Warren, Pa. (See page 733.)
Weekes-Hoffman Co., Syracuse, N. Y. (See page 613.)

GEARS, Differential, for Fords

(Including both standard and special differentials)

Badger—See Lewis Differential Co.
Dorr-Miller—See Forest City Machine & Forge Co.
Earle Gear & Machine Co., Stenton & Wyoming Aves., Philadelphia, Pa.
Forest City Machine & Forge Co., 5101 Lakeside Ave. N. E., Cleveland, O. "Dorr-Miller."
Ka-Wood Gear Co., 2281 Superior St., Detroit, Mich.
Lewis Differential Co., 121 Huron St., Milwaukee, Wis. "Badger."
Powrlok Co., 1107 E. 152nd St., Cleveland, O.
Simmons Mfg. Co., 3405-11 Perkins Ave., Cleveland, O.
Weekes-Hoffman Co., Syracuse, N. Y. (See page 613.)

GEARS, DIFFERENTIAL TRACTOR—See Gears, Tractor Differential

GEARS, FIBRE—See Gears and Pinions, Rawhide

GEARS, METAL—See Gears and Pinions, Metal

GEARS, Motor Boat Reverse

(See also Clutches, Motor Boat Friction)

Atlas Machine Works, 4159 St. Aubin Ave., Detroit, Mich. "Bull Dog."
Baldridge Gear Co., Boston, Mass.
Brennan Motor Mfg. Co., 103 Grape St., Syracuse, N. Y.
Brown Clutch Co., 1737 S. Camp St., Sandusky, O.
Bull Dog—See Atlas Machine Works.
Giles Gear Co., 1339 E. Fort St., Detroit, Mich.
Joe's—See Snow & Petrelli Mfg. Co.
Johnson Machine Co., Carlyle, 52 Main St., Manchester, Conn.
Michigan Wheel Co., 1140-48 Monroe Ave. N. W., Grand Rapids, Mich.
Navy Gear Mfg. Co., Port Chester, N. Y.
Paragon Gear Works, Cushman St., Taunton, Mass.
Snow & Petrelli Mfg. Co., 152 Brewery St., New Haven, Conn. "Joe's."
Standard Gear Co., 5900 Commonwealth Ave., Detroit, Mich.
W. & M.—See Wilmarth & Morman Co.
Wilmarth & Morman Co., 1179 Monroe Ave., Grand Rapids, Mich. "W. & M."

GEARS, Motor Boat Steering

Carpenter & Co., Geo. B., 440 N. Wells St., Chicago, Ill.
Edson Mfg. Co., 257 Atlantic Ave., Boston, Mass.
Hall Co., W. S., 17 Elm St., Rochester, N. Y. "Reliance-Rochester."
Reliance-Rochester—See Hall Co.
Sea Bright Dory Works, 491 Atlantic Ave., Long Branch, N. J.
Wilcox-Crittenden & Co., 2 S. Main St., Middletown, Conn.

GEARS, Motorcycle Transmission

Eclipse Machine Co., Elmira, N. Y. (See page 525.)

GEARS, RAWHIDE — See Gears and Pinions, Rawhide

GEARS, REVERSE—See Gears, Motor Boat Reverse

GEARS, RING—Gears, Steel Ring

GEARS, Special Ratio Rear Bevel, for Fords

(Rear bevels and pinions of higher ratio than standard for increasing speed of car for racing purposes)

Cross Gear & Engine Co., 3260 Bellevue Ave., Detroit, Mich. (See page 1191.)
Detroit Radiator & Specialty Co., 4835 Woodward Ave., Detroit, Mich.
James Mfg. Co., D. O., 1114-24 W. Monroe St., Chicago, Ill.

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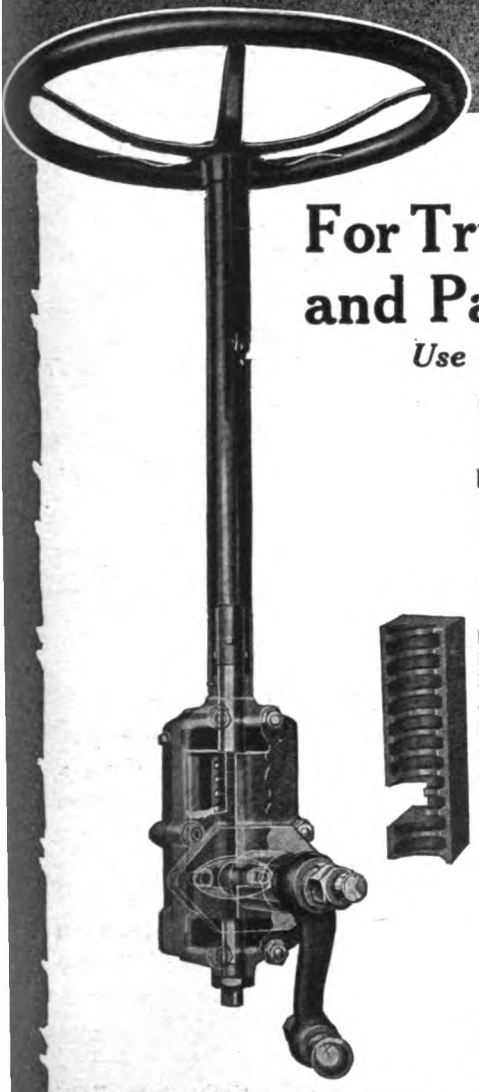
LAVINE
STEERING GEARS

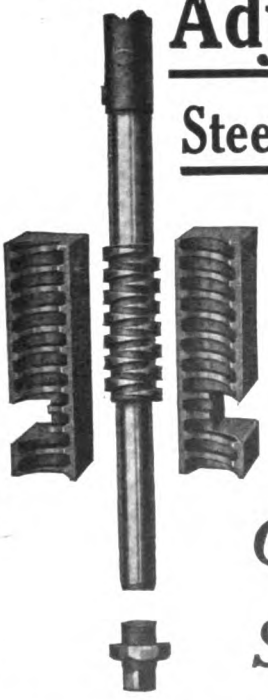


For Trucks, Tractors and Passenger Cars

Use the

Adjustable

Steering Gear



Simple in Design

The product of the most up-to-date STEERING GEAR factory

Quality and Service

LAVINE GEAR COMPANY
60-80 KEEFE AVE., MILWAUKEE, WIS.

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GEARS, Special Ratio Rear Bevel, for Fords (Continued)

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Milwaukee Forge & Machine Co., Milwaukee, Wis. "M. F.")

M F—See Jonas, C. N. & F. W.

Noonan Mfg. Co., D. R., Paris, Ill.

Puritan Machine Co., 70 Puritan Bldg., Detroit, Mich. (See page 683.)

Weekes-Hoffman Co., Syracuse, N. Y. (See page 613.)

GEARS, SPEEDOMETER—See Gears and Pinions, Rawhide

GEARS, Starter Transmission

(For automatically meshing pinion on starter motor with fly wheel gear)

Bendix—See Eclipse Machine Co.

Eclipse Machine Co., Elmira, N. Y. "Bendix." (See page 525.)

GEARS, Steel Ring

(For attaching to flywheel for self-starter)

Adapt Machinery Co., 1624 S. Wabash Ave., Chicago, Ill.

Chevrolet, A., 719 N. Illinois St., Indianapolis, Ind.

Crago Machine Works, 1416 Walnut St., Kansas City, Mo.

Kent Auto Parts Co., 1742 Logan St., Denver, Colo.

Sattler's Machine Shops & Works, 1601 Spring Garden St., Philadelphia, Pa.

GEARS, Steering

(Complete Steering Gear Units)

Alling-Lander Co., Basket St., Sodus, N. Y.

C. A. S. Products Co.—See C. A. S. Engineering Co.

C. A. S. Engineering Co., 4210 Woodward Ave., Detroit, Mich. (Sole Distributors for C. A. S. Products Co., Columbus, O.)

Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representative.) (See page 345.)

Cross Gear & Engine Co., 3260 Bellevue Ave., Detroit, Mich. (See page 1191.)

Ditweiler Mfg. Co., Primrose St., Galion, O.

Gemmer Mfg. Co., 2137 Merrick St., Detroit, Mich.

Horat & Co., Lafayette, Ind. (See page 857.)

Jacox—See Saginaw Products Co.

Keystone-Hindley Gear Co., 20th St. & Indiana Ave., Philadelphia, Pa.

Lavine Gear Co., 60-80 Keefe Ave., Milwaukee, Wis. (See page 453.)

Medway Sales Corp., Racine Wis. (Sole Distributors for Wohlrab Gear Co., Racine, Wis. (See page 377.)

Ohmer Fair Register Co., Bolender & Big Four R. R., Dayton, O.

Raymond Engineering Corp., 307 Lafayette St., New York, N. Y.

Ross Gear & Tool Co., 800 Heath St., Lafayette, Ind. (See page 453.)

S & W—See Schweppe & Wilt Mfg. Co.

Saginaw Products Co., Hamelton & Moore Sts., Saginaw, Mich. "Jacox."

Schweppe & Wilt Mfg. Co., Mt. Elliot & Conant Ave., Detroit, Mich. "S. & W."

Steering Gear & Parts Co., 700 Harper Ave., Detroit, Mich.

Superior Machine & Engineering Co., 451 E. Fort St., Detroit, Mich.

Warner Co., T. W., Kilgore & Perkins Aves., Muncie, Ind.

Warner Gear Co., Muncie, Ind. (See page 457.)

Wohlrab Gear Co.—See Medway Sales Corp.

GEARS, STEERING MOTOR BOAT—See Gears, Motor Boat Steering

GEARS, STEERING TRACTOR—See Gears, Tractor Steering

GEARS, Steering, for Fords

Alling-Lander Co., Basket St., Sodus, N. Y.

Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich. "Ospeco."

Ospeco—See Michigan Auto Products Co.

Spaulding Mfg. Co., 922 Spring St., Grinnell, Ia.

Sprague Tire & Rubber Co., 18th & Ozard Sts, Omaha, Neb.

Universal Mfg. Co., 2633 Randolph St., Lincoln, Neb.

GEARS, TRACTOR—See Gears, Tractor Differential; also Gears, Tractor Steering; also Gears, Tractor Transmission

GEARS, Tractor Differential

Allegheny Gear Works, Chateau & Page Sts., Pittsburgh, Pa.

Dorr-Miller—See Forest City Machine & Forge Co.

Earle Gear & Machine Co., Stenton & Wyoming Aves., Philadelphia, Pa.

Forest City Machine & Forge Co., 5101 Lakeside Ave., N. E., Cleveland, O. "Dorr-Miller."

Powrlok Co., 1107 E. 152nd St., Cleveland, O.

GEARS, Tractor Steering

Alling-Lander Co., Basket St., Sodus, N. Y.

Ross Gear & Tool Co., 800 Heath St., Lafayette, Ind. (See page 455.)

GEARS, Tractor Transmission

Allegheny Gear Works, Chateau & Page Sts., Pittsburgh, Pa.

Alling-Lander Co., Basket St., Sodus, N. Y.

Brennan Motor Mfg. Co., 103 Grape St., Syracuse, N. Y.

Cotta Transmission Co., 2340 11th St., Rockford, Ill.

Covert Gear Co., Lockport, N. Y. (See page 767.)

Detroit Gear & Machine Co., Detroit, Mich. (See page 471.)

Foote Bros. Gear & Machine Co., 234-44 N. Curtiss St., Chicago, Ill. "I. X. L."

Fuller & Sons Mfg. Co., Kalamazoo, Mich. (See page 563.)

Ganschow Co., Wm., 1001-05 Washington Boulevard, Chicago, Ill. (See page 1239.)

I. X. L.—See Foote Bros. Gear & Machine Co.

Nuttall Co., R. D., McCandless St. & Harrison Ave., Pittsburgh, Pa.

Paragon Gear Works, Cushman St., Taunton, Mass.

Pittsburgh Gear & Machine Co., 27th & Smallman Sts., Pittsburgh, Pa.

Stork Motor Co., 1212 N. Niagara St., Saginaw, W. S., Mich.

Turley Gear & Machine Co., 1505-11 N. Tenth St., St. Louis, Mo.

Weekes-Hoffman Co., Syracuse, N. Y. (See page 613.)

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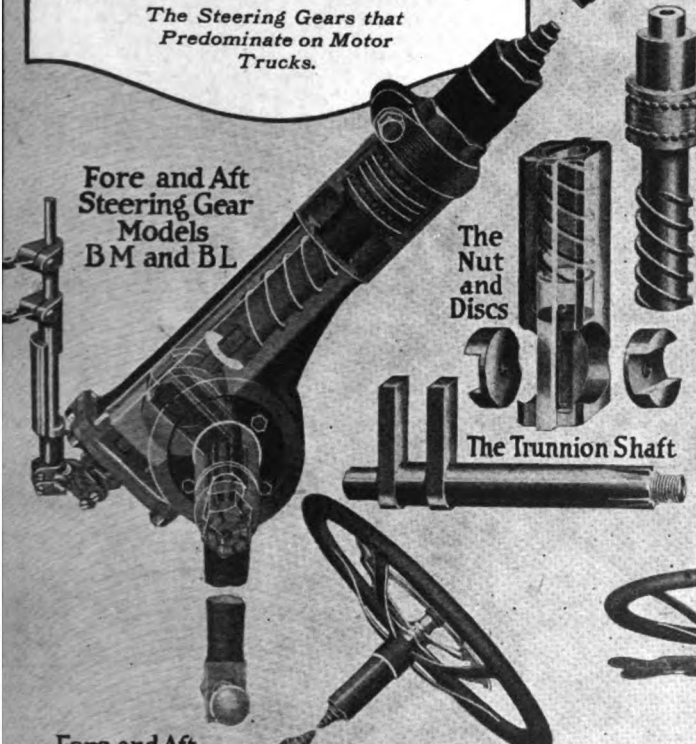
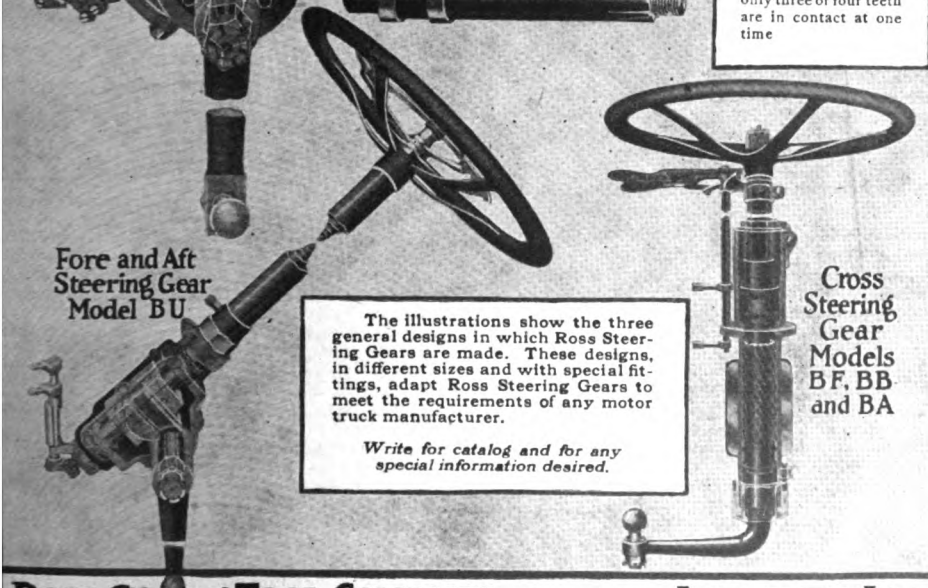
ROSS STEERING GEARS

The superior and distinctive feature of Ross Steering Gears is the screw and nut mechanism, which transfers the rotation of the steering wheel to the steering arm. The nut completely envelops the screw so that the entire bearing surface of both screw and nut are utilized. Because of the easy steering, reliability and satisfactory service which these enormous bearing surfaces guarantee, Ross Gears are used as standard steering equipment by 166 different manufacturers, representing considerably over half the entire industry. This wonderful record has earned for them the distinction of being

The Steering Gears that Predominate on Motor Trucks.



As the screw turns, the nut, which completely envelops it, travels up or down, rotating the cylindrical discs in their recesses. These discs, which hold the projecting arms of the trunnion shaft, rotate it in turn and move the steering arm forward or backward. Compare the enormous bearing surfaces of this screw and nut mechanism with other designs in which only three or four teeth are in contact at one time



The illustrations show the three general designs in which Ross Steering Gears are made. These designs, in different sizes and with special fittings, adapt Ross Steering Gears to meet the requirements of any motor truck manufacturer.

Write for catalog and for any special information desired.

ROSS GEAR & TOOL COMPANY *800 HEATH ST.* **LAFAYETTE, IND.**

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GEARS, Transmission

(Complete Transmission Units)

Adco—See American Die & Tool Co.

Alling-Lander Co., Basket St., Sodus, N. Y.

American Die & Tool Co., Reading, Pa. "Adco." (See page 991.)

Ball—See New York Gear Works.

Brennan Motor Mfg. Co., 105 Grape St., Syracuse, N. Y.

Brown-Lipe Gear Co., Syracuse, N. Y. (See page 597.)

C. A. S. Engineering Co., 4210 Woodward Ave., Detroit, Mich. (Sole Distributors for Mechanics Machine Co., Rockford, Ill. "Rockford.")

Campbell Transmission Co., Buchanan, Mich.

Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representative.) (See page 345.)

Cotta Gear Co., 117-27 Morgan St., Rockford, Ill.

Cotta Transmission Co., 2340 11th St., Rockford, Ill.

Covert Gear Co., Lockport, N. Y. (See page 767.)

Cross Gear & Engine Co., 3260 Bellevue Ave., Detroit, Mich. (See page 1191.)

Detroit Gear & Machine Co., Detroit, Mich. (See page 471.)

Detroit Transmission Co., 166 Lycaste Ave., Detroit, Mich. "Power-Rite." (See page 607.)

Dundore Mfg. Co., 244 Orange St., Reading, Pa.

Durston Gear Corp., 25 Maltbie St., Syracuse, N. Y. (See page 471.)

Frost Gear & Forge Co., Jackson, Mich. (See page 425.)

Fuller & Sons Mfg. Co., Kalamazoo, Mich. (See page 563.)

Generated Gear & Machine Co., 850 W. Atwater St., Detroit, Mich.

Gleason Works, 1000 University Ave., Rochester, N. Y.

Grant-Lees Gear Co., 2363 69th St., Cleveland, O.

Jones Gear Co., 965 Wayside Rd., Cleveland, O.

Light Mfg. & Foundry Co., Water St., Pottstown, Pa.

Mechanics Machine Co.—See C. A. S. Engineering Co.

Muncie Gear Works, Muncie, Ind. (See page 491.)

New York Gear Works, 56 Greenpoint Ave., Brooklyn, N. Y. "Ball."

Pittsburgh Model Engine Co., Lexington Ave. & McPherson St., Pittsburgh, Pa.

Power-Rite—See Detroit Transmission Co.

Rockford—See C. A. S. Engineering Co.

Savage Arms Corp., Sharon, Pa.

Stork Motor Co., 1212 N. Niagara St., Saginaw, W. S., Mich.

Superior Machine Tool Co., E. Differbaugh St., Kokomo, Ind.

Superior Machine & Engineering Co., 451 E. Fort St., Detroit, Mich.

Syracuse Gear Co., 103 Grape St., Syracuse, N. Y.

Turley Gear & Machine Co., 1505-11 N. Tenth St., St. Louis, Mo.

Van Dorn & Dutton Co., Cleveland, O.

Warner Co., T. W., Kilgore & Perkins Aves., Muncie, Ind.

Warner Gear Co., Muncie, Ind. (See page 457.)

Warner Mfg. Co., Toledo, O.

Warren Machine Products Co., Warren, Pa. (See page 733.)

Weekes-Hoffman Co., Syracuse, N. Y. (See page 613.)

Yuster Axle & Transmission Co. of America, South Bend, Ind.

GEARS, TRANSMISSION, FOR FORDS—See Gears, Auxiliary Transmission

GEARS, TRANSMISSION, MOTORCYCLE—See Gears, Motorcycle Transmission

GEARS, TRANSMISSION TRACTOR—See Gears, Tractor Transmission

GEARS and PINIONS, Metal

(Metal Gear cutting on contract to sample or blue print)

Acme Gear Co., Seventh & Wood Sts., Philadelphia, Pa.

Acme Gear Works, 45 Mills St., Astoria, N. Y.

Adams Co., 295 Sixth St., Dubuque, Ia.

Adco—See American Die & Tool Co.

Albaugh-Dover Co., 2100 Marshall Blvd., Chicago, Ill.

Alexander & Cox Co., 2358 Ogden Ave., Chicago, Ill.

Allegheny Gear Works, Chateau & Page Sts., Pittsburgh, Pa.

American Cushion Wheel Co., 7956 S. Chicago Ave., Chicago, Ill.

American Die & Tool Co., Reading, Pa. "Adco." (See page 991.)

Anderson Rolled Gear Co., Berea Rd. & L. S. & M. S. R. R., Cleveland, O.

Arthur Co., 188 Front St., New York, N. Y.

Auto Gear & Parts Co., 291-97 Marietta St., Atlanta, Ga. (See page 489.)

Ball Gear & Machine Co., 56-58 Greenpoint Ave., Brooklyn, N. Y.

Baush Machine Tool Co., Springfield, Mass. (See page 513.)

Behrendt, H. F., 22 Green St., Newark, N. J.

Bilgram Machine Works, 1235 Spring Garden St., Philadelphia, Pa.

Boston Gear Works (Norfolk Downs), Quincy, Mass.

Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.

Buttman Co., F. H., 10271 Berea Rd., Cleveland, O.

Carpenter-Tew Gear Co., 67 35th St., Brooklyn, N. Y.

Chicago Gear Mfg. Co., 2823-33 Fulton St., Chicago, Ill.

Cincinnati Gear Co., 1825-33 Reading Rd., Cincinnati, O.

Cleveland Worm Gear Co., 1667 E. 40th St., Cleveland, O.

Crofoot Gear Works, Hyde Park Ave. at Readville, Boston, Mass. (See page 641.)

Cross Gear & Engine Co., 3260 Bellevue Ave. at Readville, Detroit, Mich. (See page 1191.)

Currie & Son, J. B., 72 Adams St., Brooklyn, N. Y.

Detroit Bevel Gear Co., 8130 Jos. Compau Ave., Detroit, Mich.

Detroit Gear & Machine Co., Detroit, Mich. (See page 471.)

Dittmer Gear Mfg. Corp., 290 Grand St., Lockport, N. Y.

Dundore Mfg. Co., 244 Orange St., Reading, Pa.

Earle Gear & Machine Co., Stenton & Wyoming Aves., Philadelphia, Pa.

Federal Gear Co., 1754 E. 47th St., Cleveland, O.

Flather Mfg. Co., E. J., 46 Spring St., Nashua, N. H.

Foote Bros. Gear & Machine Co., 234-44 N. Curtiss St., Chicago, Ill.

Frost Gear & Forge Co., Jackson, Mich. (See page 425.)

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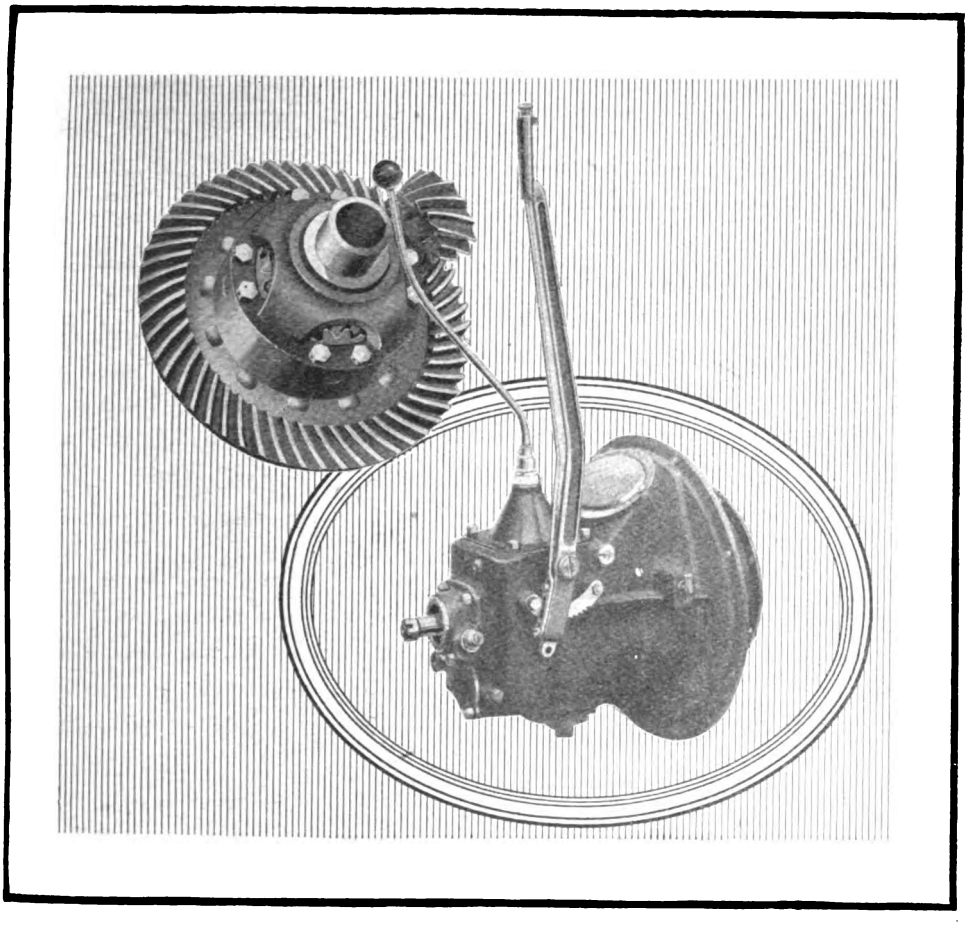

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WARNER Gear Clutches and Warner Gear Transmissions, Controls and Differential Units for motor cars and trucks are all made under *one* management and all in *one* plant. Keep this ever in mind for it is your *guaranty* of Warner Gear *quality*.

Manufacturers who seek to buy driving gears as a complete and unified mechanism welcome this system of gear units made by Warner Gear—correlated and co-ordinated through nineteen years of progress in gear making.

WARNER GEAR CO

WARNER GEAR COMPANY, MUNCIE, IND.

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GEARS and PINIONS, Metal (Continued)

Ganschow Co., Wm., 1001-05 Washington Blvd., Chicago, Ill. (See page 1239.)

Gear Grinding Machine Co., Conant Rd. & G. T. R. R., Detroit, Mich.

Gleason Works, 1000 University Ave., Rochester, N. Y.

Gould & Eberhardt, Coit & Chancellor Ave., Irvington, N. J.

Grand Machine Co., 3456 S. Grand Ave., St. Louis, Mo.

Grant Gear Works, 151 Pearl St., Boston, Mass.

Hall Machine & Tool Co., 116 Chestnut St., Providence, R. I.

Hindley Gear Co., 1105 Frankford Ave., Philadelphia, Pa.

Hoosier Drilling Machine Co., 612-14 E. Madison St., Goshen, Ind.

Indianapolis Tool & Mfg. Co., Indianapolis, Ind. (See page 669.)

James Mfg. Co., D. O., 1114-24 W. Monroe St., Chicago, Ill.

Johnson Gear Co., 735-37 Folsom St., San Francisco, Cal.

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Milwaukee Forge & Machine Co., Milwaukee, Wis. "M. F.")

Jones Gear Co., 965 Wayside Rd., Cleveland, O.

Keystone-Hindley Gear Co., 20th St. & Indiana Ave., Philadelphia, Pa.

Lauer Machine Co., John, 620-26 St. Antoine St., Detroit, Mich.

Levene Motor Co., 2200 Diamond St., Philadelphia, Pa. (See page 531.)

Link-Belt Co., Indianapolis, Ind. (See page 235.)

MF—See Jonas, C. N. & F. W.

Machine Products Co., E. 179th St. & St. Clair Ave., Cleveland, O.

Mead—See National Gear & Truck Wheel Corp.

Meisel Press Mfg. Co., 945 Dorchester, Ave., Boston, Mass. (See page 483.)

Meisselbach-Catucci Mfg. Co., 51 Stanton St., Newark, N. J.

Michigan Gear & Engineering Co., 27 W. Woodbridge St., Detroit, Mich.

Milholland Machine Co., W. 23rd & Belt R. R., Indianapolis, Ind.

Milwaukee Forge & Machine Co.—See Jonas, C. N. & F. W.

National Gear & Truck Wheel Corp., 405 Fulton Bldg., Pittsburgh, Pa. "Mead." (See page 1109.)

New Process Gear Corp., Syracuse, N. Y. (See page 459.)

New York Gear Works, 56 Greenpoint Ave., Brooklyn, N. Y.

Newark Gear Cutting Machine Co., 67-69 Prospect St., Newark, N. J. (See page 613.)

Nilson-Miller Co., 1300-06 Hudson St., Hoboken, N. J.

Nuttall Co., R. D., McCandless St. & Harrison Ave., Pittsburgh, Pa.

Ogden Mfg. Co., Plymouth, Ind.

Pacific Gear & Tool Works, 1035 Folsom St., San Francisco, Cal.

Penmaid—See Pennsylvania Gear & Machine Co.

Pennsylvania Gear & Machine Co., E. Tioga, Weikel & Janney Sts., Philadelphia, Pa. "Penmaid." (See page 649.)

Philadelphia Gear Works, 1120 Vine St., Philadelphia, Pa.

Pittsburgh Gear & Machine Co., 27th & Smallman Sts., Pittsburgh, Pa.

Rex Mfg. Co., 655 Lieb St., Detroit, Mich.

Ross Machine Co., 1213-15 W. Fourth St., LaFayette, Ind.

Savage Arms Corp., Sharon, Pa.

Sawyer Gear & Mfg. Co., 5122 St. Clair Ave., Cleveland, O.

Service Gear & Machine Co., Second & Buttonwood Sts., Reading, Pa.

Sier-Bath Co., 142 W. 54th St., New York, N. Y. (See page 1093.)

Spacke Machine & Tool Co., 600 Madison Ave., Indianapolis, Ind.

Steel Forgings Co., Brotherton Rd., Cincinnati, O.

Stork Motor Co., 1212 N. Niagara St., Saginaw, W. S., Mich.

Syracuse Rawhide Mfg. Co., Holland Pl., Syracuse, N. Y.

T. C. M. Mfg. Co., Hunterdon & First Sts., Harrison, N. J.

Turley Gear & Machine Co., 1505-11 N. Tenth St., St. Louis, Mo.

Union Gear & Machine Co., 27 Purchase St., Boston, Mass.

Van Dorn & Dutton Co., Cleveland, O.

Wappat Gear Works, Mead St. & Braddock Ave., Pittsburgh, Pa.

Warner Gear Co., Muncie, Ind. (See page 457.)

Weekes-Hoffman Co., Syracuse, N. Y. (See page 613.)

Western Gear Works, Ninth Ave. S. & King St., Seattle, Wash.

Worcester Gear Works, 33 N. Foster St., Worcester, Mass.

GEARS and PINIONS, Rawhide and Fibre

(Rawhide or Fibre Gear cutting on contract to sample or blue print)

Chicago Rawhide Mfg. Co., 1301 Elston Ave., Chicago, Ill.

Crofoot Gear Works, Hyde Park Ave. at Readville, Boston, Mass. (See page 641.)

Earle Gear & Machine Co., Stenton & Wyoming Aves., Philadelphia, Pa.

Fabroil—See General Electric Co.

Ganschow Co., Wm., 1001-05 Washington Blvd., Chicago, Ill. (See page 1239.)

General Electric Co., Schenectady, N. Y. "Fabroil." (See page 793.)

Meisel Press Mfg. Co., 945 Dorchester Ave., Boston, Mass. (See page 483.)

Michigan Gear & Engineering Co., 27 W. Woodbridge St., Detroit, Mich.

Nuttall Co., R. D., McCandless St. & Harrison Ave., Pittsburgh, Pa.

Philadelphia Gear Works, 1120 Vine St., Philadelphia, Pa.

Syracuse Rawhide Mfg. Co., Holland Pl., Syracuse, N. Y.

Van Dorn & Dutton Co., Cleveland, O.

GEARS and PINIONS, Speedometer

(Metal and Fibre Speedometer Gears and Pinions)

Diamond State Fibre Co., Bridgeport, Pa.

Illinois Brass Mfg. Co., 224-30 W. Ontario St., Chicago, Ill.

Ogden Mfg. Co., Plymouth, Ind.

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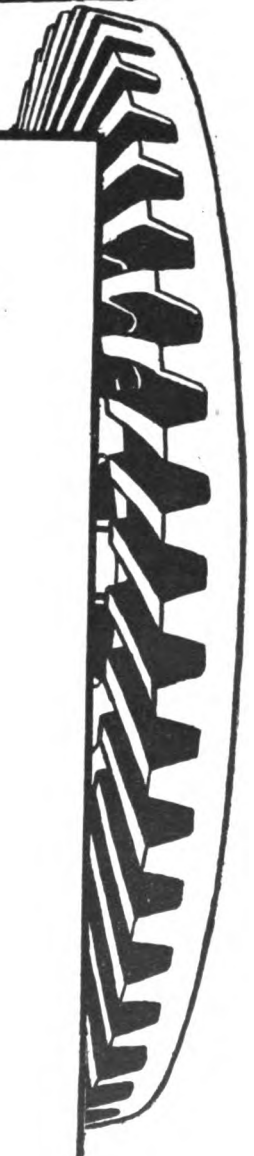
New Process Gears

Member of the



Correct Gears

Cut Steel Gears — Spurs, Straight Bevels and Spiral Bevels — for transmissions and drives, also complete Differentials for

Automobiles, Trucks and Tractors

correctly and economically made by 10 acres of latest type machinery.

Our engineers are ready to confer with you.

Quality—Quantity—Quickness

New Process Gear Corporation
Syracuse **New York**

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GEARS and PINIONS, Speedometer (Continued)

Saco—See Speedometer Accessories.
Speedometer Accessories, Plymouth, Ind. "Saco."

GENERATOR BRUSHES — See Brushes, Magneto, Starter and Generator

GENERATOR COILS — See Windings, Starter and Ignition

GENERATOR COUPLINGS—See Couplings, Magneto and Generator.

GENERATOR HOLDING STANDS — See Stands, Generator Holding

GENERATOR TUBING—See Tubing, Soft Rubber; also Tubing, Brass and Copper

GENERATOR VALVES, MOTOR BOAT—See Valves, Motor Boat Generator

GENERATOR WINDINGS—See Windings, Starter and Ignition

GENERATORS, Acetylene Gas

(For use on car; for Generators for Welding—See Machines, Autogenous Welding; for Acetylene Tanks —See Tanks, Acetylene)

Brooks Machine Co., 225 W. Lewis St., Wichita, Kans.
Columbia—See Hine-Watt Mfg. Co.
Corcoran-Victor Co., 712 Reading Rd., Cincinnati, O. "Victor."
Hall Lamp Co., C. M., Detroit, Mich. "Solar." (See page 493.)
Hine-Watt Mfg. Co., 180 N. Market St., Chicago, Ill. "Columbia."
Neverout—See Rose Mfg. Co.
Rose Mfg. Co., 910 Arch St., Philadelphia, Pa. "Never-out." (See page 711.)
Solar—See Hall Lamp Co.
Victor—See Corcoran-Victor Co.

GENERATORS, ACETYLENE GAS MOTORCYCLE—See Generators, Motorcycle; also Generators, Tractor Acetylene

GENERATORS, Electric Lighting and Battery Charging

(See also Starters, Electric; also Systems, Electric Lighting)

American Bosch Magneto Corp., (Brightwood), Springfield, Mass. "Bosch."
American Ever Ready Works, Long Island City, N. Y.
Arrow Mfg. Co., 618-22 Broadway, Toledo, O.
Auto-Lite—See Electric Auto-Lite Corp.
Auto-Sparker—See Motsinger Device Mfg. Co.
Bijur Motor Appliance Co., Hoboken, N. J. (See page 463.)
Bosch—See American Bosch Magneto Corp.
Dayton Engineering Laboratories Co., 329 E. First St., Dayton, O. "Delco."
Delco—See Dayton Engineering Laboratories Co.
Dyneto Electric Corp., Syracuse, N. Y. (See page 461.)
Electric Auto-Lite Corp., Toledo, O. "Auto-Lite."
Fisher Electrical Works, 32-36 Lynn St., Detroit, Mich.
General Electric Co., Schenectady, N. Y. (See page 793.)
Gray & Davis, Boston, Mass. (See page 911.)
Harris Electric Co., 255 California St., San Francisco, Cal. "Neuland."
Hertner Electric & Mfg. Co., 1905 W. 112th St., Cleveland, O.
Holtzer-Cabot Electric Co., 125 Armory St., Boston, Mass.
Huff—See Simms Magneto Co.
Ita Manufacturers, Glen Ellyn, Ill.
Kemco Electric Mfg. Co., 1362 E. Third St., Cleveland, O.
L-N—See Leece-Neville Co.
Lauraine Magneto Co., Long Island City, N. Y.
Leece-Neville Co., 5363 Hamilton Ave., Cleveland, O. "L-N."
Leonard Electric Co., Ward, Mt. Vernon, N. Y.
Midco—See Teagle Co.
Motsinger Device Mfg. Co., 26th & Ferry Sts., Lafayette, Ind. "Auto-Sparker."
Neuland—See Harris Electric Co.
North East Electric Co., Dept. D, Rochester, N. Y. (See page 517.)
Remy Electric Co., 1623 E. Grand Blvd., Detroit, Mich.
Simms Magneto Co., 277 N. Arlington Ave., East Orange, N. J. "Huff."
Teagle Co., 1125 Oregon Ave., Cleveland, O. "Midco."
Verlux Co., Alliance, O.
Vesta Battery Corp., 2100 Indiana Ave., Chicago, Ill.
Wagner Electric Mfg. Co., 6400 Plymouth Ave., St. Louis, Mo.
Westinghouse Electric & Mfg. Co., 82 Worthington St., Springfield, Mass. (See pages 940 and 941.)

GENERATORS, Electric Lighting and Battery Charging, for Fords

(See also Starters, Electric)

Comet Electric Co., 1237 St. Paul St., Indianapolis, Ind.
Detroit Starter Co., 124 E. Larned St., Detroit, Mich. "Genolite."
Dyneto Electric Corp., Syracuse, N. Y. (See page 461.)
Fisher Electrical Works, 32-36 Lynn St., Detroit, Mich.
Genolite—See Detroit Starter Co.
Gray & Davis, Boston, Mass. (See page 911.)
Holtzer-Cabot Electric Co., 125 Armory St., Boston, Mass. "J-S."
Ita Manufacturers, Glen Ellyn, Ill.
J-S—See Holtzer-Cabot Electric Co.
Kemco Electric Mfg. Co., 1362 E. Third St., Cleveland, O.
Lauraine Magneto Co., Long Island City, N. Y.
Pellet Magneto Co., 25th St. & Wabash Ave., Chicago, Ill. (See page 913.)
Superior Engineering Co., 332 Third Ave., Pittsburgh, Pa.
Teco—See Titan Engineering Co.
Titan Engineering Co., 603 W. Pearl St., Union City, Ind. "Teco."
Wells Mfg. Co., R. C., 114 S. Brooke St., Fond du Lac, Wis.
Westinghouse Electric & Mfg. Co., 82 Worthington St., Springfield, Mass. (See pages 940 and 941.)

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Dyneto 1 and 2-Unit

Starting and Lighting Systems for All Motor Cars and Motor Trucks

SIMPLICITY is the keynote of Dyneto design. For this reason Dyneto Starting and Lighting Systems are found as standard equipment on many well known cars and motor trucks. Ball bearings, freedom from complicated switches and wiring, and their thorough dependability make Dyneto—1 or 2 unit—systems a valuable aid to any manufacturer.

Birmingham, Ala.....The Auto Ignition Lighting & Repair Co.
Tucson, Ariz.....Schweitzer Machine Company
Phoenix, Ariz.....Schweitzer Machine Company
Little Rock, Ark.....Arkansas Battery Company
Los Angeles, Calif.....Electric Equipment Co.
San Francisco, Calif.....Guarantee Battery Co.
Denver, Colo.....Electric Service & Engineering Co.
Hartford, Conn.....Universal Auto Co.
Stamford, Conn.....Stamford Electrical Contracting Co.
Washington, D. C.....Charles Rubel & Co., Auto Electric Service Co.
Miami, Fla.....Ward Engineering & Battery Co.
Atlanta, Ga.....Southern Auto Equipment Co., Inc.
Savannah, Ga.....A. J. Lowery, Electric Service Station
Boise, Idaho.....Western Ignition & Battery Co., Inc.
Lewiston, Idaho.....Wm. E. Chase Engineering Co.
Chicago, Ill.....Arthur Jones Electric Co.
Decatur, Ill.....Decatur Battery Service Station
Elkhart, Ind.....Huco Electric Service Station
Evansville, Ind.....National Auto Supply Co.
Indianapolis, Ind.....Storage Battery Co.
Vincennes, Ind.....Meyers Motor Elec. Co.
Creston, Iowa.....Sheridan Electric Co.
Des Moines, Iowa.....Bernhard & Turner Automobile Co.
Manchester, Iowa.....Electric Service Station, Louis Rieck, Prop.
Sioux City, Iowa.....Storage Battery Electric Works
Sigourney, Iowa.....Friday's Battery & Elec. Service
Arkansas City, Kan.....Mears Bros.
Manhattan, Kans.....Keele Electrical Company
Topeka, Kan.....Keele Electric Co.
Louisville, Ky.....Rommel Smith Motor Co., Inc.
New Orleans, La.....Coin & Suhren
Shreveport, La.....Auto Equipment Co., Inc.
Baltimore, Md.....The Richardson Garage
Boston, Mass.....Eisner-Lenk Company
Detroit, Mich.....Auto Electric & Service Corp.
Duluth, Minn.....United Electric Service Co.
Minneapolis, Minn.....Reinhard Brothers
Kansas City, Mo.....Kansas City Battery & Supply Co.
St. Louis, Mo.....The Auto Ignition & Ltg. Co.
Joplin, Mo.....Sorber-Kuhn Auto Supply Co.
Butte, Mont.....Montana Elec. Equipment Co.
Lewiston, Mont.....Electric Service Station
Hastings, Neb.....Riggs Auto & Elec. Service Co.
Lincoln, Neb.....Randall & Noll
Omaha, Neb.....Auto Electric Service Co.
Elizabeth, N. J.....Stephens & Krauss, Jr.
Newark, N. J.....Essex Storage Battery & Supply Co.
Trenton, N. J.....Hutchinson Storage Battery Co.
Albany, N. Y.....Hinsdill Electric Co.
Buffalo, N. Y.....Hyle Electric Service, Inc.
Jamaica, L. I., N. Y.....G. C. Porth Co.
New York City, N. Y.....Auto Elec. Service Co.
Oneida, N. Y.....Charles L. Lloyd Co.
Rochester, N. Y.....Starter & Ignition Service Co.
Schenectady, N. Y.....United Electrical Service Co.
Troy, N. Y.....Hinsdill Electric Company
Fargo, N. D.....Fargo Plumbing & Heating Co.
Akron, Ohio.....G. M. Allen Electric Co.
Cincinnati, Ohio.....Boyle Engineering Co.
Cleveland, Ohio.....Cleveland Ignition Co.
Columbus, Ohio.....The Silva Co.
Dayton, Ohio.....Herbert F. Apple
Springfield, Ohio.....R. E. Pickering, Nat. Elec. Co.
Tiffin, Ohio.....Flech Elec. Service Station
Toledo, Ohio.....Walker & Walker
Enid, Okla.....Enid Auto Elec. Co.
Okmulgee, Okla.....Automotive Electric Service Co.
Oklahoma City, Okla.....Johnson Elec. Co.
Tulsa, Okla.....Walsh & Johnson
Pendleton, Ore.....Wm. E. Chase Co.
Portland, Ore.....Elec. Service Auto Co.
Greensburg, Pa.....Edward S. Dawson
Harrisburg, Pa.....Automotive Elec. Service Co.
Philadelphia, Pa.....Auto Equip. & Service Co.
Pittsburgh, Pa.....Doubleday-Hill Electric Co.
Reading, Pa.....General Auto Supply Co.
Charleston, S. C.....Gas Engine & Elec. Co.
Columbia, S. C.....Auto Electric Co., Inc.
Aberdeen, S. D.....Farmers Electro Lighting Corp.
Memphis, Tenn.....H. P. Woods
Abilene, Tex.....Carter's Auto Repair
Dallas Tex.....Otto A. Hille Co.
El Paso, Tex.....Western Battery & Magneto
Fort Worth, Tex.....Starter Service Co.
Wichita Falls, Tex.....Electric Service Station
Salt Lake City, Utah.....
.....Edwards-Warden Motor Parts Co., Inc.
Richmond, Va.....Auto Elec. Co.
Norfolk, Va.....Reliance Elec. Co., Inc.
Seattle, Wash.....O. L. Willett & Co.
Spokane, Wash.....Wm. E. Chase Eng. Co.
Yakima, Wash.....Wm. E. Chase Co.
Madison, Wis.....Automotive Elec. Co., R. J. Nickles
Milwaukee, Wis.....Wisconsin Magneto Exchange

CANADA

Calgary, Alta.....Electric Service Co., Ltd.
Ottawa, Ont.....Keys, Inc.
Toronto, Ont.....Geo. J. Beattie
Saskatoon, Sask.....National Elec. Co., Ltd.
Montreal, Que...Storage Battery & Motor Supplies, Ltd.

Send drawings and specifications for our recommendations

DYNETO ELECTRIC CORPORATION

SYRACUSE, N. Y.

21 State Street, NEW YORK, N. Y. — Export Representatives: BENJAMIN WHITTAKER, INC. — 36 Ludgate Hill, LONDON, E. C. 4

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GENERATORS, ELECTRIC LIGHTING, MOTORCYCLE—See Generators, Motorcycle Electric

GENERATORS, ELECTRIC LIGHTING, TRACTOR—See Generators, Tractor Electric Lighting

GENERATORS, Motorcycle Acetylene

Hall Lamp Co., C. M., Detroit, Mich. "Solar." (See page 493.)

Solar—See Hall Lamp Co.

Superior Lamp Mfg. Co., 148-50 W. 52d St., New York, N. Y.

GENERATORS, Motorcycle Electric Lighting

Alternacycle—See Art Metal Works.

A. B. C. Generator Co., 1115-17 S. Olive St., Los Angeles, Cal.

Art Metal Works, Aronson Sq., Newark, N. J. "Alternacycle." (See page 503.)

Leece-Neville Co., 5368 Hamilton Ave., Cleveland, O.

Remy Electric Co., 1623 E. Grand Blvd., Detroit, Mich.

GENERATORS, STEAM STORAGE BATTERY OPENINGS—See Steamers, Storage Battery

GENERATORS, Tractor Acetylene

Hall Lamp Co., C. M., Detroit, Mich. "Solar." (See page 493.)

Solar—See Hall Lamp Co.

GENERATORS, Tractor Electric Lighting

Arrow Mfg. Co., 618-22 Broadway, Toledo, O. "Nicolite."

Dyneto Electric Corp., Syracuse, N. Y. (See page 461.)

Nicolite—See Arrow Mfg. Co.

North East Electric Co., Dept. D, Rochester, N. Y. (See page 517.)

Reagle Co., 1125 Oregon Ave., Cleveland, O.

Remy Electric Co., 1623 E. Grand Blvd., Detroit, Mich.

Simms Magneto Co., 277 N. Arlington Ave., East Orange, N. J.

GERMAN SILVER—See Brass, Sheet

GIMPS, UPHOLSTERY—See Bindings, Upholstery

GLARE DIMMERS—See Dimmers, Glare

GLARE PREVENTERS—See Dimmers or Shades, Headlight

GLARE STOPPERS—See Dimmers, Glare

GLASS, BODY—See Glass, Polished Plate

GLASS CURTAIN WINDOWS—See Windows, Glass Curtain

GLASS CUTTERS—See Cutters, Circular Glass

GLASS FRONTS—See Shields, Wind

GLASS, Polished Plate and Flat Drawn

(For windshields and closed body work; also for lamp, clock, gage and meter glasses)

American Glass & Beveling Co., Clark & Harriett Sts., Cincinnati, O.

American Window Glass Co., Farmers Bank Bldg., Pittsburgh, Pa. (See page 1163.)

Automobile Glass Co., First St., bet. Congress & Fort Sts. W., Detroit, Mich. (See page 937.)

Bache & Co., Semon, West & Hubert Sts., New York, N. Y.

Brigstocke, M. K., 1027-29 Park St., Peekskill, N. Y.

Eureka—See Glass Founders Corp.

Glass Foundries Corp., Washington Ave. & P. R. R., Milltown, N. J. "Eureka."

Harris, Chas. H., 142-46 W. 24th St., New York, N. Y.

Hires-Turner Glass Co., 30th & Walnut Sts., Philadelphia, Pa. "Lighthouse."

Lighthouse—See Hires-Turner Glass Co.

Nurre Mirror Plate Co., Bloomington, Ind.

Peaslee-Gaulbert Co., Louisville, Ky. (See page 647.)

Perfection Co., 400 W. Ohio St., Chicago, Ill. (See page 1073.)

Rawle Co., M., 796 Seventh Ave., New York, N. Y.

Royal Glass Works, 120-26 Wooster St., New York, N. Y. (See page 939.)

Safetee-Glass Co., 326 N. Broad St., Philadelphia, Pa.

Schoonover Glass Co., W. J., 301 Wyoming Ave., Scranton, Pa.

Smith, Thos. J. D., 68-71 Chambers St., Newark, N. J.

Standard Glass Co., 1766 Mt. Elliott Ave., Detroit, Mich.

Tyler & Hippach, 366-400 W. Ohio St., Chicago, Ill.

Waxman & Co., A., 420 N. Third St., Philadelphia, Pa.

Widman & Co., J. C., 1143 14th Ave., Detroit, Mich.

GLASS, WINDSHIELD—See Glass, Polished Plate

GLASS WINDSHIELD CLEANERS—See Cleaners, Wind Shield; also Compounds, Glass Wind Shield

GLASS WINDSHIELD WINGS—See Shields, Auxiliary Windshield

GLASS, WINDOW—See Glass, Polished Plate

GLASSES, Lamp

(For Dimming or Deflecting lamp glasses—See Dimmers, Headlight)

Amesbury Bent Glass Co., Amesbury, Mass.

House Convex Glass Co., L. J., Point Marion, Pa.

Jefferson Glass Co., State St., Follansbee, W. Va.

Johnston Glass Co., Hartford City, Ind.

Lancaster Lens Co., 230-36 W. Main St., Lancaster, O.

Standard Glass Specialty Co., Morgantown, W. Va.

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WHERE TO GET BIJUR SERVICE

The Bijur Motor Appliance Company specializes in the design and manufacture of starting and lighting equipment. A ten-story plant located in Hoboken, N. J., is devoted entirely to the manufacture of electrical equipment and supply parts for passenger cars, trucks, seaplanes, airplanes, blimps, and other automotive machines.

Complete Bijur Equipments, including Motor, Generator, Gear Shift and Supply Parts, are made under one roof at the Bijur Plant.

The Bijur System was first adopted by Packard in 1912. Today it is standard equipment on many leading cars.

Over 130 Bijur Service Stations in the leading centers of the country are provided with complete information concerning the various models in service and spare parts and supplies manufactured by the Bijur Motor Appliance Company are carried in all the leading cities of the country.

ALABAMA	
Birmingham	Electric Battery Company.
ARIZONA	
Globe	Western Machinery Company.
Mogalee	Western Machinery Company.
Phoenix	Western Machinery Company.
Tucson	Western Machinery Company.
ARKANSAS	
Hot Springs	Brown and Holland
Little Rock	Arkansas Battery Company
CALIFORNIA	
Bakersfield	Mongerson Electric Machine Works
Berkeley	Motor Electric Company
El Centro	Electrical Service Company
Exeter	Central California Electric Company
Fresno	United Auto Electric Company
Lindsay	Central California Electric Company
Long Beach	Automotive Electric Company
Los Angeles	Electric Equipment Company
Oakland	Motor Electric Company
San Diego	Auto Electrical Equipment Company
San Francisco	Automotive Service Agency
Tulare	Central California Electric Company
Visalia	Central California Electric Company
COLORADO	
Denver	The Electric Service & Eng. Co.
CONNECTICUT	
Bridgeport	Electric Auto Service & Supply Co.
Hartford	Robert E. Ashwell
New Haven	The New Haven Electric Company
DISTRICT OF COLUMBIA	
Washington	Miller Dudley Company
DELAWARE	
Wilmington	Wilmington Storage Battery Company
FLORIDA	
Jacksonville	Ward Eng. & Battery Company
Miami	Ward Eng. & Battery Company
GEORGIA	
Atlanta	Paul D. O'Kelley Company
IDAHO	
Boise	Western Ignition & Battery Company
Pocatello	Edwards-Warden Motor Parts Co.
ILLINOIS	
Chicago	Arthur Jones Electric Company
Decatur	Decatur Battery Service Station
Dixon	Auto Electrical Service Station
Lincoln	Chapin Electric Garage
Peoria	Electrical Testing Company
Springfield	Chapin Electric Garage
INDIANA	
Elkhart	Auto Specialties Company
Evansville	B. M. Siefert
Fort Wayne	Hill & Herman
Indianapolis	H. T. Electric Company
Terre Haute	J. S. Cox
Vincennes	Meyers Motor Electric Company
IOWA	
Cedar Falls	Noble & Kingman
Cedar Rapids	Monroe Battery Company
Davenport	Emein Manufacturing Company
Des Moines	Glyde & McNamara
Jeffersonville	W. H. Hamilton
Keokuk	Keokuk Electric & Battery Company
Sigourney	Friday Electric & Battery Company
Sioux City	Arthur Electric Service Company
Waterloo	Standard Battery & Service Company
KANSAS	
Arkansas City	Mears Brothers
Topeka	Keele Electrical Company.
Wichita	The E. S. Cowie Electric Company
KENTUCKY	
Louisville	Rommel-Smith Motor Company
LOUISIANA	
New Orleans	Suhren, Inc.
MARYLAND	
Cumberland	The Automobile Repair Company
MASSACHUSETTS	
Boston	The Eisner-Lenk Company
Fall River	J. W. & J. H. Isherwood & Company
Salem	Alexander Michaud
Springfield	Krohne's Service Station
Worcester	Jenkins & Robinson.
MICHIGAN	
Detroit	Auto Electric & Service Corporation
Grand Rapids	Leon S. Herth Company
MINNESOTA	
Duluth	United Electric Service Company
Minneapolis	Reinhard Bros. Co., Inc.
MISSISSIPPI	
Jackson	Noel Repair Shop
MISSOURI	
Joplin	Sorber-Kuhn Auto Supply Company
Kansas City	The E. S. Cowie Electric Company
St. Joseph	Utz Electric Company
St. Louis	S. G. Hoffman Magneto Company
MONTANA	
Butte	McGrew Service Shop
NEBRASKA	
Lincoln	Randall & Noll
Omaha	Auto Electric Service Corporation
NEW HAMPSHIRE	
Manchester	Ernest E. Austin
NEW JERSEY	
East Rutherford	G. & T. Garage
Hoboken	Bijur Motor Appliance Company
Newark	Barter-Oppenheim, Inc.
NEW MEXICO	
Albuquerque	The McClosky Automobile Company
Deming	Deming Storage Battery Company
NEW YORK	
Albany	Autoelectric Equip. & Repair Company
Amsterdam	A. A. Sealey, Jr.
Binghamton	Elliott Engineering Co., Inc.
Brooklyn	P. J. Durham Co., Inc.
Buffalo	Meinhard Auto Supply Company
New York City	P. J. Durham Co., Inc.
Poughkeepsie	Pease Electric Service
Rochester	Starter & Ignition Service Co.
Schenectady	A. A. Sealey, Jr.
Syracuse	Burr Fowler Company
Troy	A. A. Sealey, Jr.
Utica	Stiefvater Electric Company
NORTH CAROLINA	
Asheville	Asheville Battery Company
NORTH DAKOTA	
Fargo	Fargo Plumbing & Heating Company
OHIO	
Akron	A. M. Allen Electric Company
Canton	Mooch Electric Supply Company
Cincinnati	Boyle Engineering Company
Cleveland	Bissinger Company
Columbus	Bissinger Magneto Company
Dayton	L. C. R. Electric Service
Toledo	Electric-Power Maintenance Company
Tiffin	Fleck's Electrical Service Station
Springfield	National Electric Company
Wooster	Larwill's Service Garage
OKLAHOMA	
Oklahoma City	Johnson Electric Company
Tulsa	Walsh Electric Company
OREGON	
Pendleton	Wm. R. Chase Eng. Company
Portland	Sunset Electric Company
PENNSYLVANIA	
Allentown	Auto Electric Company
East Liberty (Pittsburgh)	Doubleday-Hill Electric Company
Erie	Electric Battery & Construction
Harrisburg	Excelsior Auto & Battery Company
Philadelphia	Auto Equip. & Service Company
Reading	Berk's Auto & Ignition Company
Uniontown	Reed Automobile Service
RHODE ISLAND	
Providence	American Ball Company
SOUTH CAROLINA	
Charleston	The Gas Engine & Electric Co., Inc
Columbia	Auto Electric Company
SOUTH DAKOTA	
Sioux Falls	Auto Electric Service, Inc.
TENNESSEE	
Chattanooga	Mudge Auto Electric Company
Knoxville	McNutt & Company
Memphis	Southern Electric Service Company
TEXAS	
Abilene	Carters' Auto Repair Shop
Dallas	Automotive Electric Company
El Paso	Western Battery & Magneto Company
Fort Worth	Starter Service Company
Houston	Hulbert-Still Electric Company
San Angelo	Ragsdale Auto Supply Company
San Antonio	St. Callahan
Wichita Falls	Electric Service Station
UTAH	
Salt Lake City	Edwards-Warden Motor Parts Co.
VIRGINIA	
Norfolk	Reliance Electric Company
Richmond	Southern Auto Repair Company, Inc.
WASHINGTON	
Seattle	Sunset Electric Company
Spokane	Wm. E. Chase Eng. Company
Wenatchee	Electric Supply Company
Yakima	Wm. E. Chase Eng. Co.
WEST VIRGINIA	
Wheeling	McKelvey-Ewing Electrical Company
WISCONSIN	
Kenosha	Auto Service Company
Madison	Madison Battery & Service Company
Milwaukee	Wisconsin Magneto Exchange
Oshkosh	Langstadt-Meyer Company
Sheboygan	Acker Electrical Company
FOREIGN	
AUSTRALIA	
Adelaide	Duncan & Fraser, Ltd.
CANADA	
Montreal, Que.	Fehr Bros.
Winnipeg, Man.	Michael Ert, Ltd.
CUBA	
Havana	Electrical Equipment Co. of Cuba
ENGLAND	
London, W.	Duncan Watson Company
NEW ZEALAND	
Waiera, H. B.	H. D. Marsh, P. O. Box No. 41
SOUTH AFRICA	
East London	Evans & Company, Ltd.

Bijur Motor Appliance Company

BIJUR SYSTEM

Main Office & Factory Hoboken, N.J.

Detroit Office Kresge Building

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GLASSES, Lubricator

(Glass cylinders and tubes for lubricators and sight feeds)

Bache & Co., Semon, West & Hubert Sts., New York, N. Y.
Doerco—See Doerr Glass Co.
Doerr Glass Co., Peach St. & Blvd., Vineland, N. J. "Doerco."
Moncrieff—See Rogers Co.
Rogers Co., H. A., 87 Walker St., New York, N. Y. (Importers.) "Moncrieff."

GLOVES and GAUNTLETS, Motorists'

Allen Glove Co., 15 Forrest St., Gloversville, N. Y.
American Glove Co., 2025 Churchill St., Chicago, Ill.
Bi-Plane—See Morrison-Ricker Mfg. Co.
Bishop Co., J. H., Wyandotte, Mich.
Black Ghost—See Heagle, James.
Boss Mfg. Co., 70 Washington St., Brooklyn, N. Y. "Walloper."
Brad—See Bradford, R. E.
Bradford, R. E., 5 Burr St., Gloversville, N. Y. "Brad."
Crosby-Frisian Fur Co., 571 Lyell Ave., Rochester, N. Y.
Eisendrath Glove Co., 2001 Elston Ave., Chicago, Ill.
Ellsworth & Thayer Mfg. Co., 336-40 Broadway, Milwaukee, Wis. "Great Western."
Fried, Ostermann Co., 617-45 Reed St., Milwaukee, Wis. "Price."
Gloversville Auto-Glove Co., 69-73 W. Fulton St., Gloversville, N. Y. "M. W. M."
Great Western—See Ellsworth & Thayer Mfg. Co.
Grinnell—See Morrison-Ricker Mfg. Co.
Grip-Tite—See Morrison-Ricker Mfg. Co.
Hansen Mfg. Co., O. C., 517 Wright St., Milwaukee, Wis.
Heagle, James, First Ave. & Market St., Johnstown, N. Y. "Black Ghost."
Limp-Kuff—See Morrison-Ricker Mfg. Co.
Luther Glove Co., J. P., Berlin, Wis. "Red Ball."
M. W. M.—See Gloversville Auto Glove Co.
Michigan Motor Garment Co., Greenville, Mich. "Never-Rip." (See page 367.)
Morawetz Co., 217-25 E. Water St., Milwaukee, Wis.
Morrison-Ricker Mfg. Co., 72 Broad St., Grinnell, Ia. "Grinnell," "Rist-Fit," "Grip-Tite," "Limp-Kuff," "Bi-Plane."
Never-Rip—See Michigan Motor Garment Co.
Pontiac Knitting Co., Pontiac, Mich.
Price—See Fried, Ostermann Co.
Red Ball—See Luther Glove Co.
Ripon Knitting Works, Ripon, Wis.
Rist-Fit—See Morrison-Ricker Mfg. Co.
Save-A-Sleeve—See U. S. Glove Co.
Segco—See Syracuse-Eldridge Co.
Shayne & Co., C. C., 126 W. 42d St., New York, N. Y.
Stifel & Sons, J. L., Wheeling, W. Va.
Syracuse-Eldridge Co., 1108 Spring St., Syracuse, N. Y. "Segco."
U. S. Glove Co., Marion, Ind. "Save-A-Sleeve."
Walloper—See Boss Mfg. Co.
Walrath Glove Co., Gloversville, N. Y.

GLOVES and MITTENS, Aviators

(For Clothing—See Clothing; for Helmets—See Helmets)

Centemeri & Co., P., 400 Fifth Ave., New York, N. Y.
Hansen Mfg. Co., O. C., 517 Wright St., Milwaukee, Wis.
Morrison-Ricker Mfg. Co., 72 Broad St., Grinnell, Iowa.
Spalding & Bros., A. G., 126 Nassau St., New York, N. Y.

GLOVES, Rubber

(Acid Proof Gloves for storage battery workers)

Aetna Rubber Co., 815 E. 79th St., Cleveland, O
Faultless Rubber Co., Ashland, O.

GLUE, Aircraft Liquid

(See also Cement, Aeroplane Waterproof)

Dependon—See Feigel & Bro.
Feigel & Bro., M., 185 Wooster St., New York, N. Y. "Dependon."
Ferdinand & Co., L. W., 152 Kneeland St., Boston, Mass. "Jeffery's."
Jeffery's—See Ferdinand & Co.
Monite Waterproof Glue Co., 136 W. Lake St., Chicago, Ill.

GLUE HEATERS—See Heaters, Glue

GLUE, LINOLEUM—See Cement, Linoleum

GOGGLES, Aviators

American Optical Co., Southbridge, Mass. "Wellsworth."
Aviglass—See Hardy & Co.
Dwelle-Kaiser Co., 237-51 Elm St., Buffalo, N. Y.
Hardy & Co., F. A., 10 S. Wabash Ave., Chicago, Ill. "Aviglass."
Resistal—See Strauss & Buegeleisen.
Strauss & Buegeleisen, 16 Hanover Pl., Brooklyn, N. Y. "Resistal."
Uhico—See Uhlemann Optical Co.
Uhlemann Optical Co., Mallers Bldg., Chicago, Ill. "Uhico."
Wellsworth—See American Optical Co.

GOGGLES, Mechanics and Welders

Adams, William C., 332 Boylston St., Boston, Mass.
American Thermo-Ware Co., 16 Warren St., New York, N. Y.
American Welding Co., 2301 Olive St., St. Louis, Mo.
Chicago Eye Shield Co., 2300 Warren Ave., Chicago, Ill. "Fyber-Weld," "Kraftguard."
Cover, H. S., Chippewa Ave., South Bend, Ind.
Fyber-Weld—See Chicago Eye Shield Co.
Insula Welds—See Strauss & Buegeleisen.
Kraftguard—See Chicago Eye Shield Co.
Merry Optical Co., 1009 Walnut St., Kansas City, Mo.
Resistal Industrielle—See Strauss & Buegeleisen.

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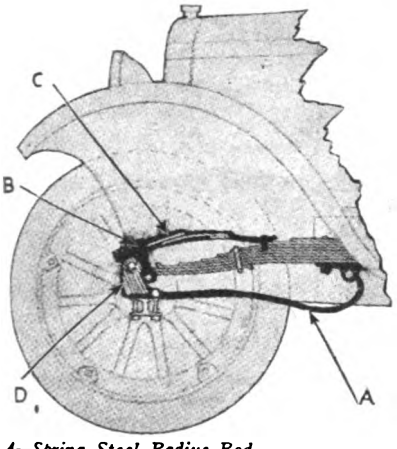
FOR

CHEVROLET

and All Cars Equipped With

CANTILEVER SPRINGS



A—Spring Steel Radius Rod
B—Pendulum Leverage Hanger
C—Vibration Equalizer Springs
D—Pivotal Support or Axle Standard

Four Points of Resilience

Each Marvel Shock Absorber produces resilience at four points —four sources of gentle springy action, where only one existed before. The only shock absorber of any type that absorbs more than a vertical rebound bump. Marvels will cushion a lateral thrust (head-on), as the impact force is shunted directly to a pendulum hanger and are drawn off on the sensitive equalizer springs.

Here Is What Marvels Do for Cantilever Springs

1. Lift the Cantilever Spring entirely off of the axle and suspend it free to move in a pivotal hanger. Now all the propelling, or transmission force of the car is eliminated from the cantilever spring. Sounds unusual, doesn't it? But 5,000 sets have been running for many months in mountainous territory, and they proved to be a sensational winner right from the start.

2. Next a yieldable radius rod of spring steel transmits the propelling force.

3. Impact forces delivered by ruts, bumps and rough spots, act instantly on the pendulum leverage arm (sensitive to a few pounds) and are drawn off in the top equalizer springs.

Easy to Install

Marvel Shock Absorbers come assembled complete, ready to install, with full set front and rear. Quickly installed and nothing to get out of order or to adjust.

Price

The cost of a complete set of Marvel Shock Absorbers for a 490 Chevrolet is $35.00 at any distribution point in the United States. For other type cars having cantilever springs the price varies.

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6520 CARNEGIE AVENUE CLEVELAND, OHIO

Exclusive Distributors:

CANADA—Marvel Shock Absorber Co., Toronto

CALIFORNIA—B. C. Lund, 2032 Broadway, Oakland BRANCH—Portland, Oregon

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GOGGLES, Mechanics and Welders (Continued)

Strauss & Buegeleisen, 16 Hanover Pl., Brooklyn, N. Y. "Insula Welds," "Resistal Industrielle."

Strong, Kennard & Nutt Co., 2044 E. Ninth St., Cleveland, O.

Willson Goggles, Inc., Second & Washington Sts., Reading, Pa.

GOGGLES and EYE SHIELDS, Motorists

A-Justo—See Aske Moore Corp.

Adams, William C., 232 Boylston St., Boston, Mass.

Albex—See Willson & Co.

Allwon—See Strauss & Buegeleisen.

American Optical Co., Southbridge, Mass. "Sedan," "Biplane."

American Spectacle Co., 47 W. 34th St., New York, N. Y.

American Thermo-Ware Co., 16 Warren St., New York, N. Y. "Autocrat."

Anito—See New Era Optical Co.

Aske Moore Corp., 19 Lake Ave. N., Duluth, Minn. "A-Justo."

Autocrat—See American Thermo-Ware Co.

Autoglass—See Hardy & Co.

Biplane—See American Optical Co.

Cesco—See Chicago Eye Shield Co.

Chicago Eye Shield Co., 2300 Warren Ave., Chicago, Ill. "Cesco," "Nonstrain."

De Luxe—See Griffin, G. A.

Dim-A-Glare—See Hainert & Son.

Dimmer Goggle Co., Whiting, Ind.

Eff & See—See Frank & Co.

Eyetects—See Strauss & Buegeleisen.

Flexishield—See Strauss & Buegeleisen.

Frank & Co., Arthur, 71-73 Nassau St., New York, N. Y. "Eff and See."

George—See Hainert & Son.

Griffin, G. A., 110 E. 23d St., New York, N. Y. "De Luxe."

Haco—See Hudson Products Co.

Hainert & Son, F. H., 3043 Nicollet Ave., Minneapolis, Minn. "George," "Dim-A-Glare."

Hudson Products Co., 44 E. 23d St., New York, N. Y. "Haco."

Hardy & Co., F. F., 10 S. Wabash Ave., Chicago, Ill. "Autoglass."

Humaco—See Humboldt Mfg. Co.

Humboldt Mfg. Co., 266 Hyde Park Ave. (Forest Hills), Boston, Mass. "Humaco."

Jay & Dee Specialty Co., 41 Park Row, New York, N. Y.

Keystone—See Willson & Co.

King Optical Co., F. W., Euclid Arcade Bldg., Cleveland, O.

Kirstein Sons Co., E., 242 Andrews St., Rochester, N. Y. "Shur-On."

Mucalite—See Strauss & Buegeleisen.

New Era Optical Co., 132 W. Madison St., Chicago, Ill. "Anito."

Nonstrain—See Chicago Eye Shield Co.

Nosquint—See Strauss & Buegeleisen.

Nuform—See Strauss & Buegeleisen.

Optical Specialties Co., 132 Church St., New York, N. Y. "Snugfit."

Overall—See Strauss & Buegeleisen.

Pennsylvania Optical Co., 126 S. Fifth St., Reading, Pa.

Resistal—See Strauss & Buegeleisen.

Sedan—See American Optical Co.

Segco—See Syracuse & Eldridge Glove & Logging Co.

Shur On—See Kirstein Sons Co.

Siesel-Spill Mfg. Co., 19 Madison Ave., New York, N. Y. "Turtle."

Snugfit—See Optical Specialties Co.

Standard Optical Co., Geneva, N. Y. "Stoco."

Stoco—See Standard Optical Co.

Strauss & Buegeleisen, 16 Hanover Pl., Brooklyn, N. Y. "Allwon," "Eyetects," "Resistal," "Ventiflex," "Mucalite," "Nosquint," "Overall," "Nuform," "Xylo," "Flexishield."

Syracuse & Eldridge Glove & Logging Co., 1108 Spring St., Syracuse, N. Y. "Segco."

Turtle—See Siesel-Spill Mfg. Co.

Ventiflex—See Strauss & Buegeleisen.

Willson Goggles, Inc., Second & Washington Sts., Reading, Pa. "Albex," "Zylbex," "Keystone."

Xylo—See Strauss & Buegeleisen.

Yatman Rubber Co., 267-69 Mt. Pleasant Ave., Newark, N. J.

Zylbex—See Willson & Co.

GOGGLES, WELDERS—See Goggles, Mechanics

GONGS, MECHANICAL—See Bells, Mechanical

GOVERNORS, Engine

(For keeping the speed of a car below predetermined limits)

American Governor & Mfg. Co., Anderson, Ind.

Berden Mfg. Co., 2178 E. Grand Blvd., Detroit, Mich.

Dell & Co., 1237 Majestic Bldg., Detroit, Mich. (See page 467.)

Duplex Engine Governor Co., 58 Flatbush Ave. Ext., Brooklyn, N. Y. "Simplex." (See page 469.)

Evans—See Hoffecker Co.

Hoffecker Co., Motor Mart Bldg., Boston, Mass. "Evans."

International Devices Co., 326 Broadway, New York, N. Y.

K. P. Products Co., 250 W. 54th St., New York, N. Y.

Monarch Governor Co., 1832-34 W. Bethune Ave., Detroit, Mich.

Pharo Mfg. Co., 1336 Woodward Ave., Detroit, Mich. (See page 469.)

Pierce Governor Co., Anderson, Ind. (See page 467.)

S-W-S Co., Minneapolis, Minn. (See page 467.)

Simplex—See Duplex Engine-Governor Co.

Standard Governor Co., Rockford, Ill.

Victor Engineering Co., 19 N. Lumber St., Allentown, Pa.

GOVERNORS, Engine, for Fords

(For keeping the speed of the car below predetermined limits)

Autoware Corp., 441 State St., Detroit, Mich. "Kant-Speed."

Berden Mfg. Co., 2178 E. Grand Blvd., Detroit, Mich.

Cyclone—See Holland Brass Works.

Dell & Co., 1237 Majestic Bldg., Detroit, Mich. (See page 467.)

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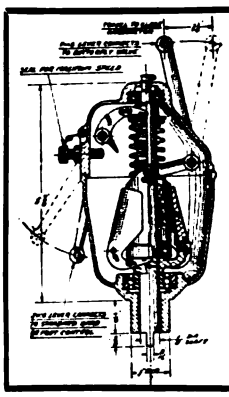

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The overwhelming endorsement that the truck industry has given Pierce Governors proves conclusively two things:
—it proves that these manufacturers recognize the necessity of automatic speed control if their trucks are to deliver maximum service at minimum cost.
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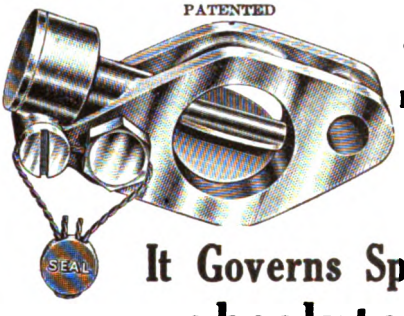

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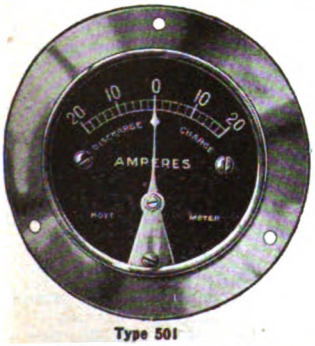

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GOVERNORS, Engine, for Fords (Continued)

Duplex Engine Governor Co., 58 Flatbush Ave. Ext., Brooklyn, N. Y. "Simplex." (See page 469.)

Holland Brass Works, 616-18 W. Monroe St., Chicago, Ill. "Cyclone."

Kant-Speed—See Autoware Corp.

M. B. S. Mfg. Co., 117 Sixth Ave., Clinton, Ia.

Monarch Governor Co., 1832-34 W. Bethune Ave., Detroit, Mich.

Pierce Governor Co., Anderson, Ind. (See page 467.)

Simplex—See Duplex Engine-Governor Co.

Special Appliance Corp., Chicago, Ill. (See page 1021.)

Standard Governor Co., Rockford, Ill.

GOVERNORS, ENGINE TRACTOR—See Governors, Tractor Engine

GOVERNORS, LOAD—See Meters, Truck-Load Indicating

GOVERNORS, Tractor Engine

American Governor & Mfg. Co., Anderson, Ind.

Berden Mfg. Co., 2178 E. Grand Blvd., Detroit, Mich.

Dobson—See Northwest Mfg. Co.

International Devices Co., 326 Broadway, New York, N. Y.

K. P. Products Co., 250 W. 54th St., New York, N. Y.

Monarch Governor Co., 1832-34 W. Bethune Ave., Detroit, Mich.

Northwest Mfg. Co., 228-30 N. Fifth St., Minneapolis, Minn. "Dobson."

Pickering Governor Co., Pickering St., Portland, Conn.

Pierce Governor Co., Anderson, Ind. (See page 467.)

S-W-S Co., Minneapolis, Minn. (See page 467.)

Standard Governor Co., Rockford, Ill.

Taco—See Tractor Appliance Co.

Tractor Appliance Co., 210 Monroe St., New Holstein, Wis. "Taco."

Victor Engineering Co., 19 N. Lumber St., Allentown, Pa.

GRAPHITE CYLINDER CUPS—See Lubricators, Cup Cylinder

GRAPHITE CYLINDER LUBRICATORS—See Lubricators, Cup Cylinder

GRAPHITE, Lubricating

(For Graphite Grease—See Greases, Cup and Gears)

Acheson Products—See Cassidy Co.

Cassidy Co., Inc., Edward A., 23 W. 43d St., New York, N. Y. (Sales Dept. for Acheson Products, Niagara Falls, N. Y.) (See page 87.)

Chester Graphite Co., Chester Springs, Pa.

Dixon Crucible Co., Joseph, Jersey City, N. J. (See page 469.)

Liberty Chemical Works, 352 E. Illinois St., Chicago, Ill.

Motorflake—See Superior Flake Graphite Co.

Oilzum—See White & Bagley Co.

Superior Flake Graphite Co., 76 W. Monroe St., Chicago, Ill. "Motorflake." (See page 719.)

United States Graphite Co., Saginaw, Mich.

White & Bagley Co., Worcester, Mass. "Oilzum." (See page 663.)

GRAVITY LUBRICATORS—See Lubricators, Motor Boat Gravity

GRAY IRON CASTINGS—See Castings, Gray Iron

GREASE BAGS — See Boots, Steering Knuckle

GREASE CUP WRENCHES—See Wrenches, Grease Cup

GREASE CUPS—See Cups, Oil and Grease

GREASE GUN LOADERS—See Loaders, Grease Gun

GREASE GUNS—See Guns, Grease; also Guns, Portable Garage Grease; also Systems, Chassis Lubricating

GREASE RETAINERS FOR FORDS—See Retainers, Rear Axle Grease

GREASES, Cup and Gear

Acheson Products—See Cassidy Co.

Advance—See Lynch, Alonzo K.

Advance Grease Co., Jackson, Mich.

Albany—See Cook's Sons.

Alexander & Co., H. T., 17 Battery Pl., New York, N. Y. "Grand Prix."

Allegheny—See Roseberg Oil Co.

Alpha—See Cook's Sons.

Amalie—See Sonneborn Sons

American Oil Co., American Bldg., Baltimore, Md. "Eze-Lube," "Amoco."

American Oil Corp., S. Water St., Jackson, Mich.

Amoco—See American Oil Co.

Anti-Friction Lubricant Co., E. Broad St., St. Joseph, Mich.

Arco Co., Euclid Ave. & E. 65th St., Cleveland, O.

Armour Oil & Chemical Co., Reserve Bank Bldg., Kansas City, Mo.

Asbury Graphite Mills, Asbury, N. J.

Atlas—See Swan & Finch Co.

Aurora—See Pigot-Seyre Co.

Auto Oil Co., 172 S. Water St., Jackson, Mich.

Auto Specialties Mfg. Co., Buffalo, N. Y. "Beats-All." (See page 1193.)

Badger—See Wadhams Oil Co.

Balcylene—See Balso Oil Co.

Balkan—See Jones & Bro., J.

Balso Oil Co., 238 N. Erie St., Toledo, O. "Balcylene."

Banner—See Clarkson & Ford Co.

Baum's Castorine Co., 104 N. George St., Rome, N. Y.

Bayerson Oil Works—See Bock & Co.

Beats-All—See Auto Specialties Mfg. Co.

Berry's Sons, Jas. L., 11 Broadway, New York, N. Y.

Bison—See Swan & Finch Co.

Black Devil—See Frazer Lubricator Co.

Black Diamond—See Sweet, Charles F.

Bliven & Carrington, 29 Moore St., New York, N. Y. "E. Z. Way," "Spermolene."

Bock & Co., Harry E., 717 Book Bldg., Detroit, Mich. (Sole Distributors for Bayerson Oil Works, Erie, Pa.) "Ebonite." (See page 525.)

Borne, Scrymser Co., 80 South St., New York, N. Y. "Colonial," "Silex," "Puritan."

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Lubrophite Transmission and Differential Grease is a non-fluid fibrous lubricant manufactured from pure mineral oils. It contains no rosin, no tallow, no acid, no chemicals, no foreign fibre, not even perfume. Particularly designed for the lubrication of transmission and differential gears, nothing else.

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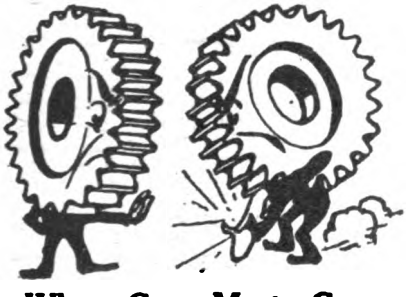
"Just Squeeze The Sack"

Dealers: This outfit sells as fast as you stock and profits are worth while. Write today.

The Lubrophite Oil Products Co.
1515-17 W. Sixth Street, Cincinnati, Ohio



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there is bound to be more or less friction. But it can be held down to a negligible minimum by proper lubrication.

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Write for Booklet No. 35-G and Lubricating Chart, giving name of your car.

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Branches in Chicago and Detroit
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GREASES, Cup and Gear (Continued)

Bull Dog—See Climax Western Oil Co.
Calypsol—See Swan & Finch Co.
Camden Chemical Mfg. Co., 18th & Mickle Sts., Camden, N. J. "Greyhound."
Carbo Oil Co., Cleveland, O.
Cascade—See Swan & Finch Co.
Cassco Bar-Metallic Packing Co., 3 S. Dearborn St., Chicago, Ill.
Cassidy Co., Inc., Edward A., 28 W. 43d St., New York, N. Y. (Sales Department for Acheson Products, Niagara Falls, N. Y.) "Gredag." (See page 87.)
Cataract Refining & Mfg. Co., Marine National Bank Bldg., Buffalo, N. Y. "Bison," "Calypsol," "Cascade."
Chester Graphite Co., Chester Springs, Pa. "Hexagon."
Chainolene Mfg. Co., 564 W. Randolph St., Chicago, Ill. "Purolene."
Cincinnati Oil Works Co., 525 Eggleston Ave., Cincinnati, O. "Cinoco."
Cinoco—See Cincinnati Oil Works Co.
Clarkson & Ford Co., 55 Water St., New York, N. Y. "Banner."
Climax—See Sweet, Charles F.
Climax Lubricating Co., 218 N. 13th St., Philadelphia, Pa.
Climax Western Oil Co., 2324 Tenth Ave., S., Minneapolis, Minn. "Bull Dog."
Colonial—See Borne, Scrymser Co.
Columbia Refining Co., 90 West St., New York, N. Y. "K. A. C.," "Royal."
Connecticut Oil Co., 549 S. Leonard St., Waterbury, Conn.
Cook's Sons, Adam, 702-10 Washington St., New York, N. Y. "Albany," "Alpha."
Crane & Co., 91 Oliver St., Boston, Mass. "Eureka."
Cupese—See Swan & Finch Co.
Cupolene—See Tide Water Oil Co.
Currola—See Curry Bros. Oil Co.
Curry Bros. Oil Co., 252-55 Franklin St., Boston, Mass. "Currola," "Superba," "Unity."
Damascus Mfg. Co., 9501 Cassius Ave., Cleveland, O.
Dearborn Chemical Co., 332 S. Michigan Ave., Chicago, Ill.
Detroit—See Zurn Co.
Dilleys—See Lindsay, McMillan Co.
Dixon Crucible Co., Joseph, Jersey City, N. J. (See page 469.)
Drake Oil Co., 99 E. Spring St., Titusville, Pa.
Duffy Oil & Grease Co., 505 W. 45th St., New York, N. Y.
Duplex—See Enterprise Oil Co.
Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
Duro-Mum—See Great Western Oil Co.
Dutch—See Van Cleef Bros.
E. Z. Way—See Bliven & Carrington.
Eagle Oil & Supply Co., 45 India St., Boston, Mass. "Eagleine."
Eagleine—See Eagle Oil & Supply Co.
Ebonite—See Bock & Snelling Co.
Economy—See Pennsylvania Lubricating Co.
Emco—See Emery Mfg. Co.
Emery Mfg. Co. Co., 43 Main St., Bradford, Pa. "Emco."
Emlenton Refining Co., Emlenton, Pa.
Empire—See Richardson Lubricating Co.
En-Ar-Co—See National Refining Co.
Ensign Refining Co., 10703 Quebec Ave., Cleveland, O.
Enterprise Oil Co., 164 Chandler St., Buffalo, N. Y. "Duplex."
Eureka—See Crane & Co.
Evr-Lastin—See Imperial Oil Co.
Excelsior—See Kellogg & Co.
Excelsior—See Mills Oil Co.
Exo-Lube—See American Oil Co.
Famous Sales Co., 4234 S. Wabash Ave., Chicago, Ill. "Gear-Life."
Faultless—See Hawkeye Oil Co.
Fibroviscos—See Sheppard, W. S.
Fiske Bros. Refining Co., 24 State St., New York, N. Y. "Lubroleine."
Frank Oil Co., 23 W. Spring St., Titusville, Pa.
Fraser Lubricator Co., 3921 Normal Ave., Chicago, Ill. "Black Devil."
Gearease—See Swan & Finch Co.
Gear-Life—See Famous Sales Co.
Gere-Lub—See Kentucky Consumers Oil Co.
Gold Medal—See Monarch Mfg. Co.
Gold Medal—See Stevenson Bro. & Co.
Golden—See Great Western Oil Co.
Grand Prix—See Alexander & Co.
Great Western Oil Co., 2855 E. 37th St., Cleveland, O. "Superior," "Golden," "Duro-Mum."
Gredag—See Cassidy Co.
Gree-No-Co—See Greenslade Oil Co.
Green Seal—See Monarch Mfg. Co.
Green Seal—See Phoenix Oil Co.
Greenslade Oil Co., 455 W. Jefferson Ave., Detroit, Mich. "Gree-no-co."
Greoil—See Robinson & Son Co.
Greyhound—See Camden Chemical Mfg. Co.
Gulf Refining Co., Pittsburgh, Pa. "Supreme."
Haggerty Refining Co., 50 South St., New York, N. Y. "Thermo."
Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker." (See page 227.)
Harris Oil Co., A. W., Providence, R. I. (See page 665.)
Havoline—See Indian Refining Co.
Hawkeye Oil Co., Miles & Roosevelt Sts., Waterloo, Ia. "Faultless."
Hercules—See Media Grease Co.
Hexagon—See Chester Graphite Co.
Hobson Oil Co., 1974 Broadway, New York, N. Y. "Knightol."
Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whiz."
Houghton & Co., E. F., 240 W. Somerset St., Philadelphia, Pa.
Howard Lubricants Co., 1105 Bedford Ave., Brooklyn, N. Y. "Rome."
I-O-C—See Invader Oil Co.
I. X. L.—See Kramer Co.
Ideal—See Sheppard, W. S.
Ideal—See Street & Co.
Imperial Oil Co., Merchants Exchange, St. Louis, Mo. "Evr-Lastin."
Indian Refining Co., 244 Madison Ave., New York, N. Y. "Havoline."
Invader Oil Co., 76 Pearl St., New York, N. Y. "I-O-C."
Invincible—See Millers Sons Co.
Ironsides Co., Hartman Bldg., Columbus, O. "Shield."
Jones & Bro., J., 429 Locust St., Philadelphia, Pa. "Balkan."
K. A. C.—See Columbia Refining Co.
Kellogg & Co., E. H., 242-44 South St., New York, N. Y. "Excelsior."
Kelly Graphite Mills, 351 W. 26th St., New York, N. Y.
Kenco—See Kendall Refining Co.

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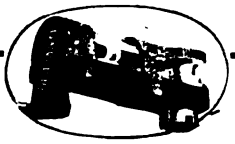

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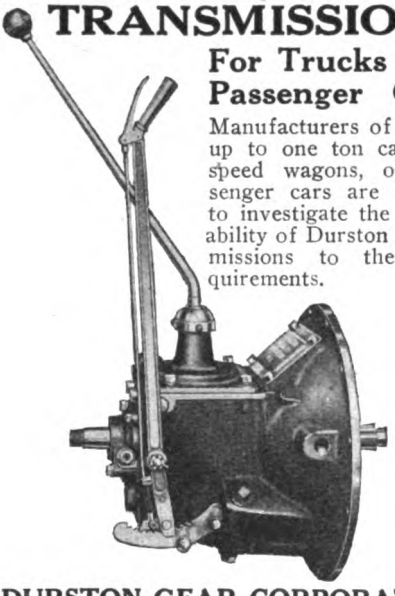

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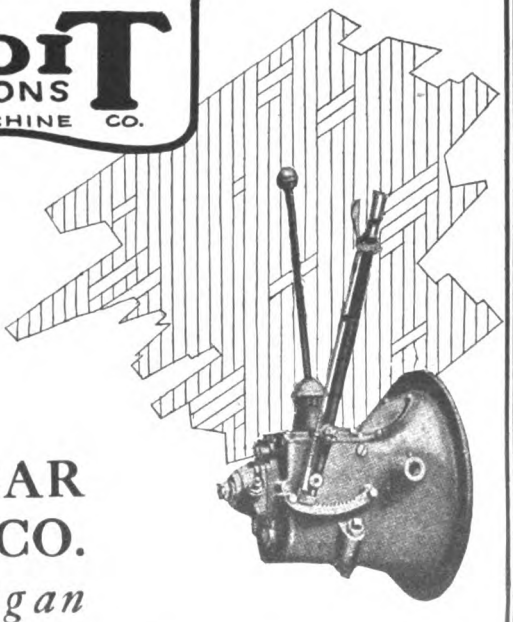
DETROIT TRANSMISSIONS
DETROIT GEAR & MACHINE CO.



DETROIT GEAR *and* MACHINE CO.
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GREASES, Cup and Gear (Continued)

Kendall Refining Co., Bradford, Pa. "Royal," "Kenco."

Kentucky Consumers Oil Co., 37th & Bank Sts., Louisville, Ky. "Gere-Lub."

Keystone Lubricating Co., 21st & Clearfield Sts., Philadelphia, Pa.

Keystone Oil & Mfg. Co., 111 N. Market St., Chicago, Ill.

Knightol—See Hobson Oil Co.

Kramer Co., W. J., 214-16 Read St., Milwaukee, Wis. "I. X. L."

La-Lo Chemical Co., Hay & Friendship Sts., Providence, R. I.

Layton Park Oil & Soap Co., M. & M. Bank Bldg., Milwaukee, Wis.

Liberty Bell Oil Co., 600 S. Vandeventer Ave., St. Louis, Mo.

Liberty Chemical Works, 352 E. Illinois St., Chicago, Ill.

Lindsay, McMillan Co., 242 Broadway, Milwaukee, Wis. "Dilleys."

Loos & Dilworth, 134 S. Front St., Philadelphia, Pa. "Pioneer."

Lubriko Co., Meadow & Jackson Sts., Philadelphia, Pa.

Lubroleine—See Fiske Bros. Refining Co.

Lubrophite Oil Products Co., 1515-17 W. Sixth St., Cincinnati, O. (See page 469.)

Lynch, Alonzo K., 310-12 Flushing Ave., Brooklyn, N. Y. "Advance."

McLean-Jones Oil & Supply Co., 40 Court St., Boston, Mass. "Swatiska."

Magie Bros., 110-12 S. Clinton St., Chicago, Ill.

Magnolia Petroleum Co., Akard & Main Sts., Dallas, Tex. "Magolene."

Magolene—See Magnolia Petroleum Co.

Manhattan Oil Co., 592 Vandalia St., St. Paul, Minn. "New Process."

Marshall Oil Co., Marshalltown, Ia. "Moco," "Rex."

Master—See Pure Oil Co.

Media Grease Co., Media, Pa. "Hercules."

Micaflake—See U. S. Mica Mfg. Co.

Middle States Oil Co., Engineers Bldg., Cleveland, O.

Millers Sons Co., A. D., Columbus & Preble Aves., Pittsburgh, Pa. "Invincible."

Mills Oil Co., C. E., So. West St., Syracuse, N. Y. "Excelsior."

Milwaukee Lubricants Co., 224 Broadway, Milwaukee, Wis.

Mobilubricant—See Vacuum Oil Co.

Moco—See Marshall Oil Co.

Monamobile—See Monarch Mfg. Co.

Monarch Mfg. Co., 11th Ave. & Sixth St., Council Bluffs, Ia. "Gold Medal," "Green Seal," "Monamobile."

Monogram—See New York Lubricating Oil Co

Motor Mica Products Co., 556 Washington Blvd., Chicago, Ill. "Twentieth Century."

Motorlube—See Tygert Co.

Mutual Oil Co., Inter-State Bldg., Kansas City, Mo.

National Oil & Supply Co., 180 Freylinghuysen Ave., Newark, N. J. "Viscos."

National Refining Co., Rose Building, Cleveland, O. "En-Ar-Co."

New Process—See Manhattan Oil Co.

New York Lubricating Oil Co., 116 Broad St., New York, N. Y. "Monogram."

New York & New Jersey Lubricant Co., 401 Broadway, New York, N. Y. "Non-Fluid."

Nobetr—See Sawyer Oil Co.

Non-Fluid—See New York & New Jersey Lubricant Co.

Nusco—See Sun Co.

Ohio Grease Co., Box 21, Loudonville, O. (See page 267.)

O'Neil Oil & Paint Co., 297-303 E. Water St., Milwaukee, Wis. "Velvet."

Oil City Oil & Grease Co., Seneca St., Oil City, Pa.

Oil & Grease Co. of America, 414 Flushing Ave., Brooklyn, N. Y.

Oilzum—See White & Bagley Co.

Ottomo—See Pioneer Mfg. Co.

Palubco—See Pennsylvania Lubricating Co.

Panama Lubricants Co., 2624 Santa Fe Ave., Los Angeles, Cal.

Panhard Oil Corp., 395 Broadway, New York, N. Y.

Paragon Refining Co., 2935 Front St., Toledo, O. "Polar."

Paramount—See Schibling, Frederick.

Parker Refining Co., 1307 W. 11th St., Cleveland, O.

Patterson Lubricating Co., 114 Broad St., Boston, Mass.

Penn—See Pennsylvania Lubricating Co.

Penn Petroleum & Supply Co., 1224-30 Washington Ave., Philadelphia, Pa. "Primus."

Pennsylvania Lubricating Co., 34th St. & A. V. Ry., Pittsburgh, Pa. "Penn," "Sylvan," "Economy," "Paluboo."

Perfection—See Wood Co.

Perfecto—See Young & Kimball.

Perry Oil Co., 372 Central Ave., Pawtucket, R. I.

Petroleum Products Co., 39th St. & B. & O. R. R., Pittsburgh, Pa. "Sound-Proof."

Philadelphia Grease Mfg. Co., 348-50 S. Swanson St., Philadelphia, Pa.

Phinney Bros. Co., Chambers Bldg., Oil City, Pa. "Quaker State."

Phoenix Oil Co., 2554 W. Fifth St., Cleveland, O. "Green Seal."

Pigot-Sayre Co., 17 Battery Pl., New York, N. Y. "Aurora."

Pioneer—See Loos & Dilworth.

Pioneer Mfg. Co., 10309 Harvard Ave., Cleveland, O. "Ottomo."

Polar—See Paragon Refining Co.

Polarine—See Standard Oil Co. of N. Y.

Primol Products Corp., Philadelphia, Pa.

Primus—See Penn Petroleum & Supply Co.

Pure Oil Co., 1306 First St. S., Minneapolis, Minn. "Puritan," "Master."

Puritan—See Pure Oil Co.

Puritan—See Borne, Scrymser Co.

Puritan Oil & Paint Co., 1318 W. 70th St., Cleveland, O.

Purolene—See Chainolene Mfg. Co.

Pyramid Oil Co., 2424 University Ave., Minneapolis, Minn.

Quaker State—See Phinney Bros. Co.

Red "C" Oil Mfg. Co., Keyser Bldg., Baltimore, Md. "Speedway."

Redline—See Union Oil Co. of California.

Rex—See Marshall Oil Co.

Richardson Lubricating Co., Front & Maine Sts., Quincy, Ill. "Empire."

Rie-Nie—See Durkee-Atwood Co

Robertson Lubricants Co., 21st & Race Sts., Philadelphia, Pa. (See page 665.)

Robinson & Son Co., Wm. C., 32 South St., Baltimore, Md. "Greoil."

Rome—See Howard Lubricants Co.

Roseberg Oil Co., 923 Santa Fe Ave., Los Angeles, Cal. "Allegheny."

Royal Petroleum Co., 204 E. 74th St., New York, N. Y.

Royal—See Columbia Refining Co.

Royal—See Kendall Refining Co.

Sawyer Oil Co., Howard B., 62 Long Wharf, Boston, Mass. "Nobetr."

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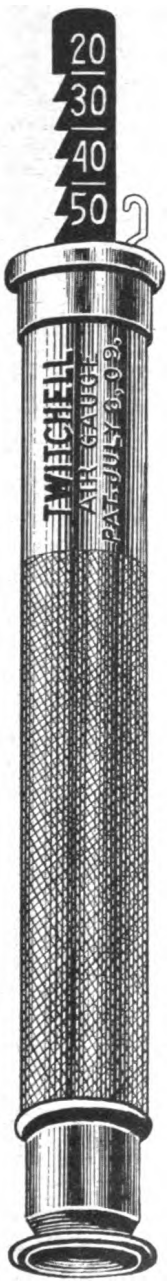

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GREASES, Cup and Gear (Continued)

Schibling, Frederick, 617 Greenwich St., New York, N. Y. "Paramount."

Shamrock—See Sinclair Refining Co.

Shappell Petroleum Products Co., N. West St. Rd., Lima, O.

Sheppard, W. S., 21 Lawrence St., Newark, N. J. "Fibroviscos," "Ideal."

Shield—See Ironsides Co.

Silex—See Borne, Scrymser Co.

Shultis Automotive Corp., 16-22 W. 61st St., New York, N. Y. (Distributors.) (See page 609.)

Sinclair Refining Co., Chicago, Ill. "Shamrock." (See page 665.)

Snow Flake Axle Grease Co., 123 Oliver St., Fitchburg, Mass.

Sonneborn Sons, L., 262 Pearl St., New York, N. Y. "Amalie."

Sound-Proof—See Petroleum Products Co.

Speare's Sons Co., Alden, 140 Sixth St., Boston, Mass.

Spedolene—See Tide Water Oil Co.

Speedway—See Red "C" Oil Mfg. Co.

Spermolene—See Blinen & Carrington.

Standard Oil Co. of N. Y., 26 Broadway, New York, N. Y. "Polarine."

Stevenson Bro. & Co., 110 Race St., Philadelphia, Pa. "Gold Medal."

Stock Xylite Grease & Oil Co., G. B., 619 Water St., Port Huron, Mich. "Xylite."

Street & Co., J. D., 41st St. & Park Ave., St. Louis, Mo. "Ideal."

Sullivan Oil Co., 413 N. Wells St., Chicago, Ill.

Sun Co., Finance Bldg., Philadelphia, Pa. "Nusco."

Superba—See Curry Bros. Oil Co.

Superior—See Great Western Oil Co.

Superior Oil Co., 1426 W. Third St., Cleveland, Ohio.

Supreme—See Gulf Refining Co.

Sutherland & Co., P. 232 Milk St., Boston, Mass. "Velvet."

Swan & Co., Alden S., 135 Front St., New York, N. Y. "Swanovia."

Swan & Finch Co., 165 Broadway, New York, N. Y. "Atlas," "Gearease," "Cupese."

Swanovia—See Swan & Co.

Swastika—See McLean-Jones Oil & Supply Co.

Sweet, Charles F., 347 State St., Hartford Conn. "Climax," "Black Diamond."

Syco Gear Kling—See Symonds Co.

Sylvan—See Pennsylvania Lubricating Co.

Symonds Co., Joseph H., Westfield, Mass. "Syco Gear Kling."

Texaco—See Texas Co.

Texas Co., 17 Battery Pl., New York, N. Y. "Texaco," "Thuban."

Thermo—See Haggerty Refining Co.

Thuban—See Texas Co.

Tide Water Oil Sales Corp., 11 Broadway, New York, N. Y. "Veedol," "Spedolene," "Cupolene." (See page 667.)

Tilton Lubricants Co., 1220 San Pedro St., Los Angeles, Cal.

Townsend Co., W. E., 137 W. 56th St., New York, N. Y. (Distributors.) (See page 683.)

Tulc—See Universal Lubricating Co.

Twentieth Century—See Motor Mica Products Co.

Tygert Co. E. A., 126 N. Front St., Philadelphia, Pa. "Motorlube."

Union Oil Co., of California, Union Oil Bldg., Los Angeles, Cal. "Redline."

Union Petroleum Co., Widener Bldg., Philadelphia, Pa.

Unity—See Curry Bros. Oil Co.

United States Graphite Co., Saginaw, Mich.

Universal—See Young & Kimball.

Universal Lubricating Co., Schofield Bldg., Cleveland, O. "Tulc."

Vacuum Oil Co., 61 Broadway, New York, N. Y. "Mobilubricant."

Valvoline Oil Co., 11 Broadway, New York, N. Y.

Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."

Veedol—See Tide Water Oil Co.

Velvet—See O'Neil Oil & Paint Co.

Velvet—See Sutherland & Co.

Velvet—See Winne, Howard B.

Veracity—See Warren Refining & Chemical Co

Visco Motor Oil Co., 2104 Superior Ave., N. W., Cleveland, O.

Viscos—See National Oil & Supply Co.

Viscosity Oil Co., 1101-03 W. 37th St., Chicago, Ill.

Wadhams Oil Co., 359 Clinton St., Milwaukee, Wis. "Badger."

Warren Refining & Chemical Co., Cleveland, O. "Veracity."

Waverly Oil Works Co., Pittsburgh, Pa. (See page 663.)

Western Chemical Mfg. Co., 151 Sixth St., Milwaukee, Wis. "Owl."

White & Bagley Co., Worcester, Mass. "Oilzum." (See page 663.)

Whitmore Mfg. Co., 33 Iron Ct., Cleveland, O.

Whiz—See Hollingshead Co.

Willhelm Oil Co., 2361 Hampden Ave., St. Paul, Minn. "Willoco."

Wiloco—See Willhelm Oil Co.

Winn, Wm. R., 143 Maiden Lane, New York, N. Y.

Winne, Howard B., 714 W. Jackson Blvd., Chicago, Ill. "Velvet."

Wolverine Lubricants Co., 44 Whitehall St., New York, N. Y. (See page 663.)

Wonder Worker—See Hall-Thompson Co.

Wood Co., W. A., 273 Atlantic Ave., Boston, Mass. "Perfection."

Xylite—See Stock Xylite Grease & Oil Co.

Youkim—See Young Co.

Young Co., Frank L., 111 Purchase St., Boston, Mass. "Youkim."

Zone Oil Co., W. 11th St., Cleveland, O.

Zurn Co., O. F., 2736-38 N. Broad St., Philadelphia, Pa. "Detroit."

GRIDS, CAMP STOVE—See Stoves, Camp

GRINDER HEADS—See Heads, Grinder

GRINDERS, LATHE—See Attachments, Lathe Cylinder Grinding

GRINDERS, Chucking

Bryant Chucking Grinder Co., 257 Clinton St. Springfield, Vt.

GRINDERS, Crank Pin

Landis Tool Co., Waynesboro, Pa. (See page 479.)

Norton Grinding Co., New Bond St., Worcester, Mass.

Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 339.)

Tindel-Albrecht—See Tindel-Morris Co.

Tindel-Morris Co., Eddystone, Pa. "Tindel-Albrecht."

GRINDERS, CUTTER — See Grinders, Reamer and Cutter

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GRINDERS, Cylinder

(For Cylinder Grinding Lathe Attachments—See Attachments, Lathe Cylinder Grinding)

Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.

Cincinnati Electrical Tool Co., 1501-03 Freeman Ave., Cincinnati, O.

Heald Machine Co., Worcester, Mass. (See page 475.)

Madison Machine Tool Co., 1245 E. Washington Ave., Madison, Wis. (See page 513.)

Micro—See Schmidt Co.

Schmidt Co., B. L., 417 W. Fourth St., Davenport, Ia. "Micro."

Vulcan Appliance Co., 512-14 Bank Blk., Denver, Colo.

Whitney & Son, Baxter D., Winchendon, Mass. (See pages 477 and 853.)

GRINDERS, Disc

Badger Tool Co., Fifth & Portland Sts., Beloit, Wis.

Besly & Co., Charles H., 118-24 N. Clinton St., Chicago, Ill.

Diamond Machine Co., 9 Codding St., Providence, R. I.

Gardner Machine Co., 410 Bushnell St., Beloit, Wis.

Hoysradt & Case, 131 Cornell St., Kingston, N. Y.

Modern Pattern & Machine Co., 451-53 Monroe Ave., Detroit, Mich.

Ramson Mfg. Co., 320 Eighth St., Oshkosh, Wis.

Rowbottom Machine Co., Waterbury, Conn.

Taylor & Fenn Co., 54-70 Arch St., Hartford, Conn.

Valley City Machine Works, 12-16 Campau Ave., N. W., Grand Rapids, Mich.

GRINDERS, Drill

Grand Rapids Grinding Machine Co., 33 Ottawa Ave., N. W., Grand Rapids, Mich.

Morse Twist Drill & Machine Co., 163 Pleasant St., New Bedford, Mass.

New Yankee—See Wilmarth & Morman Co.

Sellers & Co., Wm., 1600 Hamilton St., Philadelphia, Pa.

Washburn Shops, Boynton St., Worcester, Mass. "Worcester."

Wilmarth & Morman Co., 1179 Monroe Ave., N. W., Grand Rapids, Mich. "New Yankee."

Worcester—See Washburn Shops.

GRINDERS, ELECTRIC PORTABLE—See Drills, Electric Portable

GRINDERS, Internal

Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.

Churchill-Morgan-Crittsinger, 393 Main St., Worcester, Mass.

Cincinnati Grinder Co., Colerain & Alabama Aves., Cincinnati, O.

McCulloch Machine Co., A. P., 216 High St., W. Germantown St., Dayton, O.

Heald Machine Co., Worcester, Mass. (See page 475.)

Landis Tool Co., Waynesboro, Pa. (See page 479.)

Lansing Stamping & Tool Co., Lansing, Mich. (See page 353.)

Micro—See Schmidt Co.

Modern Tool Co., State & Second Sts., Erie, Pa.

Rivett Lathe & Grinder Co., 20 Riverview Rd. (Brighton), Boston, Mass.

Schmidt Co., B. L., 417 W. Fourth St., Davenport, Ia. "Micro."

Taylor & Fenn Co., 54-70 Arch St., Hartford, Conn.

Thompson Grinder Co., 604 E. Main St., Springfield, O.

Universal Grinding Machine Co., 67 Walnut St., Fitchburg, Mass.

Van Norman Machine Tool Co., 160 Wilbraham Ave., Springfield, Mass.

GRINDERS, Piston Ring

Alert—See Harding, S. B.

Harding, S. B., Waukesha, Wis. "Alert."

Heald Machine Co., Worcester, Mass. (See page 475.)

Walker Co., O. S., Rockdale St., Worcester, Mass.

GRINDERS, Plain Tool

American Grinder Mfg. Co.—See Jonas, C. N. & F. W.

Athol Machine Co., Athol, Mass.

Battle Axe—See Fry Mfg. Co.

Blount Co., J. G., Everett, Mass. (See page 557.)

Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.

Builders Iron Foundry, 9 Codding St., Providence, R. I.

Clizbe Bros. Mfg. Co., W. Harrison St., Plymouth, Ind.

Columbia Mfg. Co., Belleville, Ill.

Diamond Machine Co., 9 Codding St., Providence, R. I.

Ferodowill Mfg. Co., 214 W. Indiana Ave., St. Paul, Minn. "Ferro."

Ferro—See Ferodowill Mfg. Co.

Fitchburg Grinding Machine Co., 76 Winter St., Fitchburg, Mass.

Fry Mfg. Co., R. L., 2224 N. Ninth St., St. Louis, Mo. "Battle Axe."

Greenfield Machine Co., 36 Haywood St., Greenfield, Mass.

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representative for American Grinder Mfg. Co., Milwaukee, Wis.)

Johnson—See U. S. Electrical Mfg. Co.

La Salle Tool Co., 505 Second St., La Salle, Ill.

Landis Tool Co., Waynesboro, Pa. (See page 479.)

Luther Grinder Mfg. Co., Milwaukee, Wis. (See page 171.)

Modern Tool Co., State & Second Sts., Erie, Pa.

National Acme Co., Cleveland, O. (See page 657.)

Norton Grinding Co., New Bond St., Worcester, Mass.

Oesterlein Machine Co., 2850 Spring Grove Ave., Cincinnati, O. "Ohio."

Ohio—See Oesterlein Machine Co.

Partridge, E. O., 2047 W. Lake St., Chicago, Ill.

Ransom Mfg. Co., 320 Eighth St., Oshkosh, Wis.

Royersford Foundry & Machine Co., Royersford, Pa.

St. Louis Machine Tool Co., 922-32 Loughborough Ave., St. Louis, Mo.

Stapf & Co., John B., Dunkirk, N. Y.

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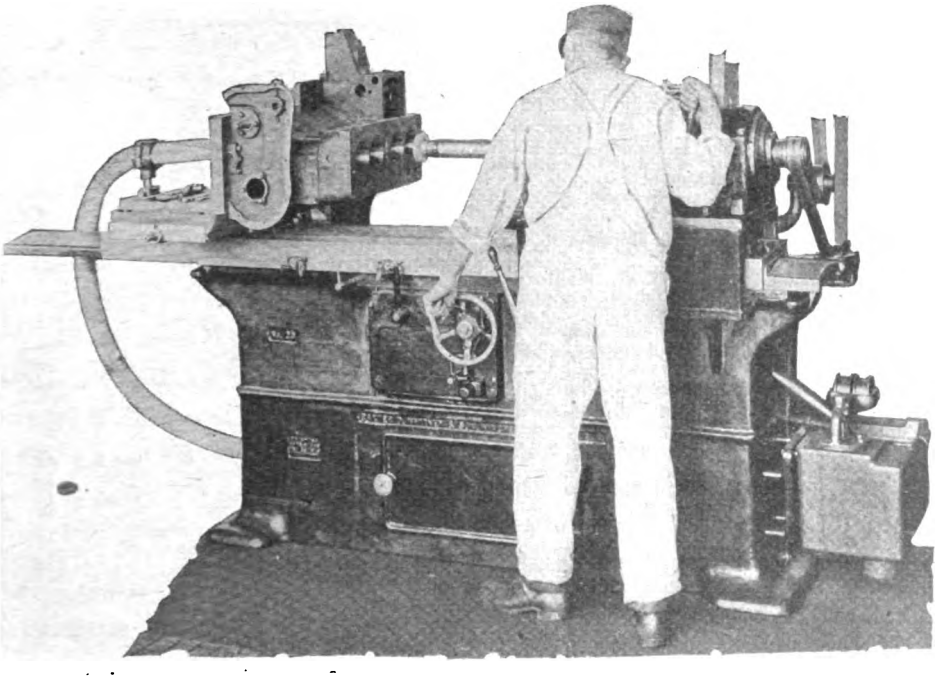

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GRINDERS, Plain Tool (Continued)

Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 507.)

Tabor Mfg. Co., 1740 Hamilton St., Philadelphia, Pa. "Taylor."

Taylor—See Tabor Mfg. Co.

U. S. Electrical Mfg. Co., Third & Central, Los Angeles, Cal. "Johnson." (See page 479.)

Valley City Machine Works, 12-16 Campau Ave. N. W., Grand Rapids, Mich.

W & P—See Webster & Perks Tool Co.

Walker Grinder Co., Worcester, Mass.

Webster & Perks Tool Co., Springfield, O.

GRINDERS, Reamer and Cutter

Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.

Clough, R. M., Tolland, Conn.

Grand Rapids Grinding Machine Co., 33 Ottawa Ave. N. W., Grand Rapids, Mich.

Greenfield Machine Co., 36 Haywood St., Greenfield, Mass.

Greenfield Tap & Die Corp., Greenfield, Mass. (See page 927.)

Harris Engineering Co., H. E., 1041-55 Broad St., Bridgeport, Conn.

Ingersoll Milling Machine Co., Douglas & Willoughby Sts., Rockford, Ill.

Le Blond Machine Tool Co., R. K., Madison & Edwards Rds., Cincinnati, O.

Manhattan Machine & Tool Works, 40-50 Market Ave., N. W., Grand Rapids, Mich.

Oesterlein Machine Co., 2850 Spring Grove Ave., Cincinnati, O. "Ohio."

Ohio—See Oesterlein Machine Co.

Thompson Grinder Co., 604 E. Main St., Springfield, O.

Universal Grinding Machine Co., 67 Walnut St., Fitchburg, Mass.

Walker Co., O. S., Rockdale St., Worcester, Mass.

Wilmarth & Morman Co., 1179 Monroe Ave., N. W., Grand Rapids, Mich.

Woods Engineering Co., 108 E. Patterson St., Alliance, O.

GRINDERS, RING—See Grinders, Piston Ring

GRINDERS, Surface

Blanchard Machine Co., 64 State St., Cambridge, Mass.

Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.

Diamond Machine Co., 9 Codding St., Providence, R. I.

Garvin Machine Co., Spring & Varick Sts., New York, N. Y.

Heald Machine Co., Worcester, Mass. (See page 475.)

La Salle Tool Co., 505 Second St., La Salle, Ill.

Landis Tool Co., Waynesboro, Pa. (See page 479.)

Manhattan Machine & Tool Works, 40-50 Market Ave., N. W., Grand Rapids, Mich.

Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 339.)

Springfield Mfg. Co., 317 Mt. Grove St., Bridgeport, Conn.

Thompson Grinder Co., 604 E. Main St., Springfield, O.

Universal Grinding Machine Co., 67 Walnut St., Fitchburg, Mass.

Valley City Machine Works, 12-16 Campau Ave. N. W., Grand Rapids, Mich.

Walker Co., O. S., Rockdale St., Worcester, Mass.

Wilmarth & Morman Co., 1179 Monroe Ave., N. W., Grand Rapids, Mich.

GRINDERS, Swing Frame

Pittsburg Grinding Wheel Co., Rochester, Pa.

Safety Emery Wheel Co., Springfield, O.

Springfield Mfg. Co., 317 Mt. Grove St., Bridgeport, Conn.

Tucker Machine Co., 222 E. Ninth St., Cincinnati, O.

GRINDERS, Timer for Fords

McCulloch Mfg. Co., 216 High St., Boston, Mass. (See page 981.)

GRINDERS, TOOL—See Grinders, Plain Tool; also Grinders, Wet Tool

GRINDERS, Universal

American Tool & Machine Co., 10 High St., Boston, Mass.

Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.

Cincinnati Grinder Co., Colerain & Alabama Aves., Cincinnati, O.

Greenfield Machine Co., 36 Haywood St., Greenfield, Mass.

Landis Tool Co., Waynesboro, Pa. (See page 479.)

Modern Tool Co., State & Second Sts., Erie, Pa.

Norton Grinding Co., New Bond St., Worcester, Mass.

Oakley Machine Tool Co., Marburg Ave. & B. & O. R. R., Cincinnati, O.

Ott Grinder Co., 217-23 W. Tenth St., Indianapolis, Ind.

Russell, Holbrook & Henderson, 30 Church St., New York, N. Y. "Sanford."

Sanford—See Russell, Holbrook & Henderson.

Taft-Peirce Mfg. Co., Woonsocket, R. I. (See page 849.)

Thompson Grinder Co., 604 E. Main St., Springfield, O.

Universal Grinding Machine Co., 67 Walnut St., Fitchburg, Mass.

Wilmarth & Morman Co., 1179 Monroe Ave., Madison, Wis.

GRINDERS, VALVE—See Machines, Valve Seating; also Tools, Valve Grinding

GRINDERS, Wet Tool

Blount Co., J. G., Everett, Mass. (See page 557.)

Bridgeport Safety Emery Wheel Co., 32 Knowlton St., Bridgeport, Conn.

Diamond Machine Co., 9 Codding St., Providence, R. I.

Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.

Hoysradt & Case, 131 Cornell St., Kingston, N. Y.

Lutter & Gies Co., 258 Lake St., Milwaukee, Wis. "Milwaukee."

Milwaukee—See Lutter & Gies.

Ransom Mfg. Co., 320 Eighth St., Oshkosh, Wis.

Sellers & Co., Wm., 1600 Hamilton St., Philadelphia, Pa.

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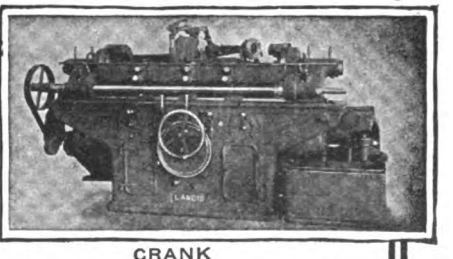

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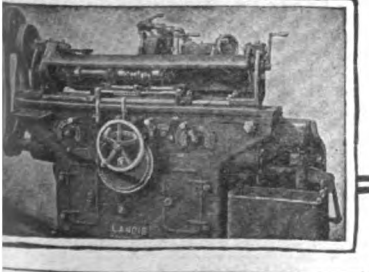
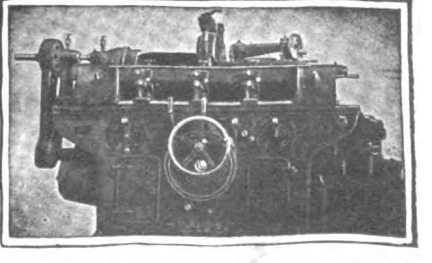


PLAIN



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GRINDERS, Wet Tool (Continued)

Springfield Mfg. Co., 317 Mt. Grove St., Bridgeport, Conn.

Sterling Grinding Wheel Co., Tiffin, O. (See page 481.)

Taylor & Fenn Co., 54-70 Arch St., Hartford, Conn.

Tucker Machine Co., 222 E. Ninth St., Cincinnati, O.

Valley City Machine Works, 12-16 Campau Ave., N. W., Grand Rapids, Mich.

Webster & Perks Tool Co., Springfield, O. "W & P."

W & P—See Webtser & Perks Tool Co.

Western Tool & Mfg. Co., Springfield, O.

GRINDING WHEELS—See Wheels, Grinding

GRIPS, Airplane Rubber

Dural Rubber Corp., Maple Ave., Flemington, N. J.

GRIPS, HAND—See Protectors, Door

GRIPS, NON-SKID—See Chains or Grips, Non-Skid; also Bands, Non-Skid

GRIPS, Pedal

(Rubber pads for applying to clutch and brake pedals to prevent feet from slipping)

Auto Pedal Pad Co., 318-20 W. 52d St., New York, N. Y. "Perfection."

Cleveland Hardware Co., 4500 Hamilton Ave., Cleveland, O.

Cloud Accessories Corp., 1408 S. Wabash Ave., Chicago, Ill. "Fullfoot."

Cushion Pedal Co., 400-32 N. Ave. 19, Los Angeles, Cal. "Mason-Allen." (See page 481.)

Dickson Auto Parts Co., 2 Columbus Circle, New York, N. Y.

Fullfoot—See Cloud Accessories Corp.

Gray-Heath Co., 1440 S. Michigan Ave., Chicago, Ill. (See page 741.)

Industrial Rubber Goods Co., Broad St., St. Joseph, Mich. (See page 481.)

Mason-Allen—See Cushion Pedal Co.

Neverslip—See Rives Mfg. Co.

Perfection—See Auto Pedal Pad Co.

Rich Mfg. Co., 1777 Broadway, New York, N. Y. "Rico." (See page 1223.)

Rico—See Rich Mfg. Co.

Rives Mfg. Co., Geo. H., Dept. A, Woolworth Bldg., New York, N. Y. "Neverslip."

Thermoid Rubber Co., Trenton, N. J. (See page 543.)

Williams Soft Pedal Co., Chamber of Commerce Bldg., Cedar Rapids, Iowa.

GRIPS, Pedal, for Fords

(Rubber pads for applying to pedals to prevent feet from slipping)

Apco Mfg. Co., Providence, R. I.

Auto Pedal Pad Co., 318-20 W. 52d St., New York, N. Y. "Perfection."

Dickson Auto Parts Co., 2 Columbus Circle, New York, N. Y.

Ever-Right Products Corp., 351-53 Jay St., Brooklyn, N. Y. "Safety-First."

Hill Pump Valve Co.—See Zinke Co.

Industrial Rubber Goods Co., Broad St., St. Joseph, Mich. (See page 481.)

Neverslip—See Rives Mfg. Co.

Perfection—See Auto Pedal Pad Co.

Racine Accessories Mfg. Co., 14th & Clark Sts., Racine, Wis. "Slip-Knot." (See page 481.)

Rich Mfg. Co., 1777 Broadway, New York, N. Y. "Rico." (See page 1223.)

Rico—See Rich Mfg. Co.

Rives Mfg. Co., Geo. H., Dept. A, Woolworth Bldg., New York, N. Y. "Neverslip."

Safety-First—See Ever-Right Products Corp.

Slip-Knot—See Racine Accessories Mfg. Co.

Stadco—See Stadeker Metal Specialty Co.

Stadeker Metal Specialty Co., 310 S. Canal St., Chicago, Ill. "Stadco."

Utility—See Zinke Co.

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Hill Pump Valve Co., Chicago, Ill. "Utility," "Sure Grip.") (See page 309.)

GRIPS, Spark and Throttle Lever

(Rubber or Composition Grips or Handles for Spark and Throttle Levers)

American Hard Rubber Co., 11 Mercer St., New York, N. Y.

Stokes Rubber Co., Jos., Taylor St., Trenton, N. J.

GRIPS, Spark and Throttle Lever, for Fords

Brickey, R. S., Aberdeen, S. Dak.

General Appliance Co., 100 Boylston St., Boston, Mass.

Hasco—See Howard Auto Specialties Co.

Howard Auto Specialties Co., Swampscott, Mass., "Hasco."

Tyler Mfg. Co., 755 Boylston St., Boston, Mass. "Tymco."

Tymco—See Tyler Mfg. Co.

GRIPS, STEERING WHEEL—See Covers, Steering Wheel Rim

GRIPS, Tractor Wheel

Grip-Iron-Grip Co., Safety Bldg., Rock Island, Ill.

Otwell Tractor Equipment Co., 6538 Livernois Ave., Detroit, Mich.

GROMMETS and EYELETS

American Brass Co., Waterbury, Conn. (See page 165.)

Brewer Tichener Corp., Cortland, N. Y. (See page 567.)

Stimpson Co., Edwin B., 70 Franklin Ave., Brooklyn, N. Y.

Traut & Hine Mfg. Co., New Britain, Conn.

GUARDS, Motorcycle Chain

International Stamping Co., 400 N. Leavitt St., Chicago, Ill. (See page 1103.)

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STERBON
For Cast Iron

THE STERLING GRINDING WHEEL CO.

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Chicago House:
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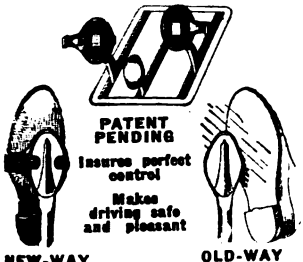
Safety Extension Pedals For Fords



"The Quick Selling Accessory"

They Transform the small smooth tread, inefficient and dangerous Ford standard clutch and brake pedals into safe and comfortable foot rests.

They are provided with Safety Guards on the sides, which absolutely prevents the feet from slipping in wet weather.

The heavy Rubber inserts eliminates vibration, insures perfect control and makes driving safe and pleasant under all circumstances.

There is no side wear on the pedal causing the foot to slide off.

The rubber inserts can be replaced when worn out at the small cost of ten cents each, making the Safety Pedal a lifelong proposition.

The Safety Extension Pedals are graceful in design and substantially made. They are easily attached in three minutes with an ordinary wrench and last a lifetime.

Price $1.25 a Pair

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14th & Clark Sts. Racine, Wis.

Generator Tubing
Gaskets
Pedal Pads
Pedal Pads for Fords
Weather Strips
Rubber Tubing (acid proof)
Bumpers (rubber)
Washers (tire pumps)
Cement Rubber
Repair Patches
Special rubber goods molded to blue print

Industrial Rubber Goods Co.

Broad St., St. Joseph, Mich.

PEDAL PADS, Price $1.50 per set
HEEL PLATES, Price $1.00 each

COMFORT SAFETY ECONOMY

The necessary accessories. Add greatly to comfort in touring, save wear on soles, heels, and floor boards and prevent accidents by making a foot slip impossible.

Ask your dealer or address

CUSHION PEDAL COMPANY
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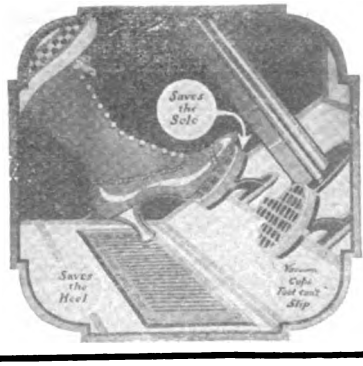
Manufacturers also of the
Allen Cushion Step
An All-Rubber Running Board Mat at $1.00 each



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GUARDS, Motorcycle Mud

International Stamping Co., 400 N. Leavitt St., Chicago, Ill. (See page 1108.)
Standard Parts Co., Cleveland, O. (See page 1149.)

GUARDS, MOTORCYCLE KNEE — See Shields, Motorcycle Knee

GUARDS, MUD—See Fenders

GUARDS, Oil for Fords

American Valve Tool Mfg. Co., 354 W. 50th St., New York, N. Y.
Denco Co., 39 Broadway, Buffalo, N. Y.

GUARDS, RADIATOR—See Fenders or Guards, Truck Radiator

GUARDS, Timer Wire, for Fords

King-See Pawnee Mfg. & Sales Co.
Pawnee Mfg. & Sales Co., Pawnee City, Neb. "King."

GUIDES, BELT, FOR FORDS—See Guides, Fan Belt

GUIDES, BRAKE ROD, FOR FORDS—See Supports, Brake Rod

GUIDES, Fan Belt, for Fords

(To prevent belt slipping off pulley)

Adco—See American Automatic Devices Co.
American Automatic Devices Co., 515 W. Monroe St., Chicago, Ill. "Adco." (See page 643.)
Apco Mfg. Co., Providence, R. I.
Aults—See Heaton & Ault.
BB—See Bayne Mfg. Co.
Bayne Mfg. Co., Bushnell, Ill. "BB." (See page 725.)
Casco Mfg. Co., Thomasville, Ga. (Sole Distributors for Cooper Auto Supply Co., Thomasville, Ga.)
Cooper Auto Supply Co.—See Casco Mfg. Co.
Dependable—See Gahm-McCormick Co.
Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.
Gahm-McCormick Co., 906 E. Main St., Streator, Ill. "Dependable." (See page 1139.)
Heaton & Ault, 6247 Greenwood Ave., Chicago, Ill. "Aults."
Home Light Co., 3353 Milwaukee Ave., Chicago, Ill.
Kant Slip—See Republic Auto Parts Co.
Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.
Mosco—See Motor Specialties Co.
Motor Specialties Co., Waltham, Mass. "Mosco."
Pedersen Lubricator Co., 636 First Ave., New York, N. Y. "Stay-On."
Republic Auto Parts Co., 31-35 Tenth St., Long Island City, N. Y. "Kant Slip."
Stay-On—See Pedersen Lubricator Co.

GUIDES, ROAD—See Maps, Road

GUIDES, Tractor Steering

(For automatically steering or guiding tractor when plowing)

Hansmann Mfg. Co., Long Prairie, Minn.
Willis-Flask Mfg. Co., 202 N. Locust St., Pittsburgh, Kans.

GUN LOADERS—See Loaders, Grease Gun

GUN METAL FINISH—See Treating, Heat; also Enamels, Lacquers and Finishes, Brass

GUNS, GARAGE GREASE—See Guns, Portable Garage

GUNS, Grease

Agner Simplex Co.—See Hinrichs Mfg. Co.
Alemite Die Casting & Mfg. Co., 341-51 W. Chicago Ave., Chicago, Ill. (See page 229.)
All-Way—See Famasco Distributing Co.
A-K—See Angsten-Kox Co.
Angsten-Kox Co., 221-23 W. Randolph St., Chicago, Ill. "A-K."
Anthony Co., 138 West Ave., Long Island City, N. Y. (See page 747.)
Atlantic Motor & Supply Co., 63 Gorham St., Boston, Mass.
Banner Accessory Mfg. Co., St. Louis, Mo. (See page 601.)
Bell Pump & Mfg. Co., 534 E. Fort St., Detroit, Mich.
Bennett Inpector Co., Muskegon, Mich. (See page 1113.)
Big Dane—See Miller & Starr Co.
Blue Champion—See Robert-Irwin Mfg. Co.
Blue Deer—See Melray Mfg. Co.
Boston—See Randall-Faichney Co.
Boston Auto Gage Co., 8 Waltham St., Boston, Mass. "E-Z-Fill." (See page 437.)
Bridgeport Brass Co., Bridgeport, Conn. (See page 907.)
Coe-Stapley Mfg. Corp., West Haven, Conn. (See page 539.)
Cox Brass Mfg. Co., Albany, N. Y. (See page 261.)
Crescent Mfg. Co., 129 Reade St., New York, N. Y. (See page 1207.)
Critz Mfg. Co., Santa Maria, Cal.
Douglas Auto Appliance Co., 2845 Chicago Ave., Minneapolis, Minn. (See page 483.)
Econo-Lub—See Middle States Oil Co.
Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. "Gem." "Jumbo."
Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 545.)
Essex Brass Corp., G. B., 2000 Franklin St., Detroit, Mich.
E-Z-Fill—See Boston Auto Gage Co.
Famasco Distributing Co., 694 Main St., Buffalo, N. Y. (Sole Distributors for U. S. All-Way Oiler Co., Waterbury, Conn. "All-Way.") (See page 433.)
Fisher—See Puritan Mfg. Co.
Forc-Ful—See Zinke Co.
Gem—See Edelmann & Co.
Generator Valve Co., 47 Dinsmore Pl., Brooklyn, N. Y. "James."
Harris Hdw. & Mfg. Co., D. P., 24-26 Murray St., New York, N. Y. "Rollfast."
Harris Mfg. Co., D. P., Reading, Pa.
Hinrichs Mfg. Co., 115 S. Dearborn St., Chicago, Ill. (Sole Distributors for Agner Simplex Co., Burlington, Wis.) "Simplex."
Horton—See Lyman, Kent E.
I. C. Mfg. Co.—See Zinke Co.
Jackson Grease Gun Co., 519 21st St., Denver, Colo.
James—See Generator Valve Co.

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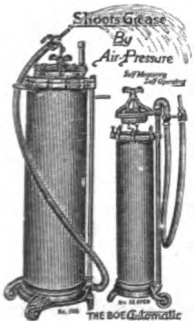

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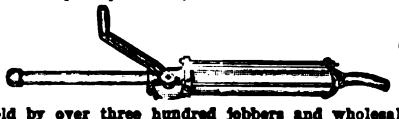
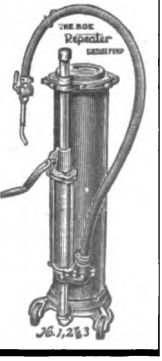


Saves Lubricant



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GUNS, Grease (Continued)

Judd & Leland Mfg. Co., Clifton Springs, N. Y. "Victor." (See page 745.)

Jumbo—See Edelmann & Co.

Kellogg Mfg. Co., Rochester, N. Y. (See page 747.)

Lee, 516-18 Van Ness Ave., San Francisco, Cal.

Lincoln Products Co., 161 Massachusetts Ave., Boston, Mass.

Lyman, Kent E., American Trust Bldg., Cleveland, O. "Horton."

Mann Corp., Kankakee, Ill.

Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill. "Silver Giant."

Melray Mfg. Co., 722 N. Vandeventer Ave., St. Louis, Mo. "Blue Deer."

Middle States Oil Co., Engineers Building, Cleveland, O. "Econo-Lub."

Miller & Starr Co., 250 Green St., Brooklyn, N. Y. "Big Dane."

Monarch Auto Specialties Co., 1211-13 Clybourn Ave., Chicago, Ill.

Monarch Carriage Goods Co., Cincinnati, O. "Victory." (See page 407.)

Noera Mfg. Co., 21-97 Griggs St., Waterbury, Conn.

Only Grease Gun Co., Newton, Ia.

Pioneer—See Stevens & Co.

Pretzel, Herman H., 108 S. Third St., Stillwater, Minn.

Puritan Mfg. Co., 299 Prospect St., Bridgeport, Conn. "Fisher."

Railway Specialty Co., Atchison, Kans. "Rysco."

Randall-Faichney Co., 76 Atherton St. (Jamaica Plain), Boston, Mass. "Boston."

Robert-Irwin Mfg. Co., 427-31 W. Broadway, New York, N. Y. "Blue Champion." (See page 939.)

Roberts & Monroe, 35 Warren St., New York, N. Y. "Romon." (See page 359.)

Rose Mfg. Co., Frank, Hastings, Neb. (See page 751.)

Rollfast—See Harris Hdw. & Mfg. Co.

Romon—See Roberts & Monroe.

Rowe Co., James C., 714-16 E. Baltimore St., Baltimore, Md.

Runyen Mfg. Co., 447 S. Division St., Grand Rapids, Mich.

Rysco—See Railway Specialty Co.

Sidel-Rattner Mfg. Co., Bush Terminal, Brooklyn, N. Y. "Wonder Minute." (See page 749.)

Silver Giant—See Mayo-Skinner Mfg. Co.

Simplex—See Hinrichs Mfg. Co.

Stevens & Co., 375 Broadway, New York, N. Y. "Pioneer." (See page 1147.)

Strickler, T. H., 4231 Wilcox St., Chicago, Ill.

Toomey Grease Gun Co., Edmore, N. Dak.

Townsend & Co., S. P., 15 Central Ave., Orange, N. J.

Universal Specialty Co., 1405-07 S. Seventh St., St. Louis, Mo.

U. S. All-Way Oiler Co.—See Famasco Distributing Co.

Victor—See Judd & Leland Mfg. Co.

Victory—See Monarch Carriage Goods Co.

Vital Mfg. Co., 7507 Quincy St., Cleveland, O.

Warren Refining & Chemical Co., Cleveland, O.

Warren & Anderson, 404 Boston Blk., Minneapolis, Minn. "Ekern."

Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 735.)

Wonder Minute—See Sidel-Rattner Mfg. Co.

Wood Mfg. Co., A. J., Leonard Bldg., Grand Rapids, Mich. "Novalve."

World Metal Products Corp., 8778 111th St., Richmond Hill, N. Y.

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for I. C. Mfg. Co., Chicago, Ill. "Fore-Ful.") (See page 315.)

GUNS, Oil

All-Way—See Famasco Distributing Co.

Anthony Co., 138 West Ave., Long Island City, N. Y. (See page 747.)

Banner Accessory Mfg. Co., St. Louis, Mo. (See page 601.)

Bell Pump & Mfg. Co., 534 E. Fort St., Detroit, Mich.

Bennett Injector Co., Muskegon, Mich. (See page 1113.)

Blue Champion—See Robert-Irwin Mfg. Co.

Boe Mfg. Co., H. M. Minneapolis, Minn. (See page 483.)

Bridgeport Brass Co., Bridgeport, Conn. (See page 907.)

Copley—See Randall-Faichney Co.

Crescent Mfg. Co., 129 Reade St., New York, N. Y. (See page 1207.)

Douglas Auto Appliance Co., 2845 Chicago Ave., Minneapolis, Minn. (See page 483.)

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. "Gem," "Jumbo."

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 545.)

Essex Brass Corp., G. B., 2000 Franklin St., Detroit, Mich.

Famasco Distributor Co., 694 Main St. Buffalo, N. Y. (Sole Distributors for U. S. All-Way Oiler Co., Waterbury, Conn. "All-Way.") (See page 433.)

Gem—See Edelmann & Co.

Generator Valve Co., 47 Dinsmore Pl., Brooklyn, N. Y. "James."

Gleason-Peters Air Pump Co., 384 Classon Ave., Brooklyn, N. Y.

Hancock Mfg. Co., 802 E. Henry St., Charlotte, Mich.

Harris Hdw. & Mfg. Co., D. P., 24-26 Murray St., New York, N. Y. "Rollfast."

James—See Generator Valve Co.

Judd & Leland Mfg. Co., Clifton Springs, N. Y. (See page 745.)

Jumbo—See Edelmann & Co.

Kellogg Mfg. Co., Rochester, N. Y. (See page 747.)

McRae & Roberts Co., 100-16 S. Campbell Ave., Detroit, Mich.

Monarch Auto Specialties Co., 1211-13 Clybourn Ave., Chicago, Ill.

Noera Mfg. Co., 21-97 Griggs St., Waterbury, Conn.

Pretzel, Herman H., 108 S. Third St., Stillwater, Minn.

Randall-Faichney Co., 76 Atherton St. (Jamaica Plain), Boston, Mass. "Copley."

Robert-Irwin Mfg. Co., 427-31 W. Broadway, New York, N. Y. "Blue Champion." (See page 939.)

Rollfast—See Harris Hdw. & Mfg. Co.

Rose Mfg. Co., Frank, Hastings, Neb. (See page 751.)

Strickler, T. H., 4231 Wilcox St., Chicago, Ill.

Universal Specialty Co., 1405-07 S. Seventh St., St. Louis, Mo.

U. S. All-Way Oiler Co.—See Famasco Distributing Co.

World Metal Products Corp., 8778 111th St., Richmond Hill, N. Y.

GUNS, Portable Garage Grease

Attwood Brass Works, Grand Rapids, Mich. (See page 1195.)

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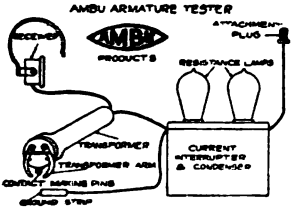

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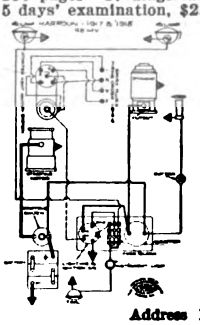

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GUNS, Portable Garage Grease (Continued)

Bennett Injector Co., Muskegon, Mich. (See page 1113.)

Boe Mfg. Co., H. M., Minneapolis, Minn. (See page 483.)

Bohannon Mfg. Co.—See Zinke Co.

Dearborn Equipment Co., Kalamazoo, Mich. (Sole Distributors for Sylvester L. O'Brien, Chicago, Ill.) (See page 403.)

Ekern Bros. Mfg. Co., Flandreau, S. D.

Midway Mechanical Co., St. Paul, Minn. (See page 607.)

O'Brien, Sylvester L.—See Dearborn Equipment Co.

Pressed Steel Tank Co., 58th & Greenfield Aves., Milwaukee, Wis.

Rose Mfg. Co., Frank, Hastings, Neb. (See page 751.)

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Bohannon Mfg. Co., Chas., Des Moines, Iowa.)

HACK SAW BLADES—See Blades, Hack Saw

HACK SAWS, ROTARY—See Saws and Cutters, Rotary

HACK SAWS, ROTARY—See Saws, Rotary Hack

HAIR PICKING MACHINES—See Machines, Hair Picking

HAIR, Upholstery

(For Upholstery Moss—See Moss, Upholstery; for Upholstery Felt—See Felt, Upholstery)

Armour Curled Hair Works, 1355 W. 31st St., Chicago, Ill.

Bentley Hair Co., Joseph, Pelham Ave., Methuen, Mass.

Blocksom & Co., Michigan City, Ind. (See page 487.)

Briggs Mfg. Co., 55 Leuschner Ave., Detroit, Mich.

Chicago Curled Hair Co., 2301-23 S. Paulina St., Chicago, Ill.

Cudahy Packing Co., 111 W. Monroe St., Chicago, Ill.

Delany & Co., (Tacony), Philadelphia, Pa.

Gordon Bros., Pierce & Orthodox Sts. (Frankford), Philadelphia, Pa.

Mitchell Co., P. R., Spring Grove & Harrison Aves., Cincinnati, O.

Morris & Co., U. S. Yards, Chicago, Ill.

Snell Co., Charles W., 321 S. Jefferson St., Chicago, Ill.

Walpert & Co., Fred, 106-108 N. Gay St., Baltimore, Md.

Wilkens Co., Wm., Frederick Ave., Baltimore, Md.

Wilson & Co., Thos., 41st St. & S. Ashland Ave., Chicago, Ill.

Woll & Co., F. P., Church & Tacony Sts. (Frankford), Philadelphia, Pa.

Woll & Sons Mfg. Co., Moscher & Berks Sts., Philadelphia, Pa.

HAMMERS, Brass and Copper

Electric Materials Co., North East, Pa.

Goodell-Pratt Co., Greenfield, Mass.

Graham & Co., James, 293 Wooster St., New Haven, Conn.

Williams & Son, E. A., 105-11 Plymouth St., Jersey City, N. J.

HAMMERS, COPPER—See Hammers, Brass

HAMMERS, Machinists

Atha Tool Co., Chapel St., Newark, N. J.

Beall Bros., Fourth St., Alton, Ill.

Bridgeport Hardware Mfg. Corp., 461 Iranistan Ave., Bridgeport, Conn. "Master."

Buffum Tool Co., Louisiana, Mo. (See page 529.)

Cheney Hammer Corp., H., Little Falls, N. Y.

Clipper Tool Co., 254 Mills St., Buffalo, N. Y.

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. "Han-D."

Fairmount Tool & Forging Co., 10611 Quincy Ave., Cleveland, O.

Han-D—See Edelmann & Co.

Heller Bros. Co., 865 Mt. Prospect Ave., Newark, N. J.

Hyde Park Mfg. Co., Bernharts, Pa.

Master—See Bridgeport Hardware Mfg. Corp.

Maydole Hammer Co., David, 45-61 Lackawanna Ave., Norwich, N. Y.

Peck, Stow & Wilcox Co., Southington, Conn "Pexto."

Perfect Handle—See Smith & Co.

Pexto—See Peck, Stow & Wilcox Co.

Smith & Co., H. D., Plantsville, Conn. "Perfect Handle."

Stanley Works, New Britain, Conn. (See page 499.)

V&B—See Vaughan & Bushnell Mfg. Co.

Vaughan & Bushnell Mfg. Co., 2114-28 Carroll Ave., Chicago, Ill. "V&B."

Vichek Tool Co., Cleveland, O.

Warner Hammer Co., Cromwell, Conn.

HAMMERS, Power

Beaudry & Co., 45 Bromfield St., Boston, Mass. "Champion," "Peerless."

Bliss Co., E. W., 29 Adams St., Brooklyn, N. Y.

Bradley & Son, C. C., 432 N. Franklin St., Syracuse, N. Y.

Champion—See Beaudry & Co.

Champion Blower & Forge Co., Harrison Ave. & Charlotte St., Lancaster, Pa.

Dienelt & Eisenhardt, 1304-18 N. Howard St., Philadelphia, Pa.

Justice & Co., P. S., 617 Chestnut St., Philadelphia, Pa.

Little Giant Co., 199 Rock St., Mankato, Minn.

McLane, J. B., North Reading, Mass.

MacGowan & Finigan Foundry & Machine Co., St. Louis, Mo. "Perfect."

Massillon Foundry & Machine Co., Massillon, O.

Nazel Engineering & Machine Works, 4041 N. Fifth St., Philadelphia, Pa.

Niles-Bement-Pond Co., 111 Broadway, New York, N. Y.

Peerless—See Beaudry & Co.

Perfect—See MacGowan & Finigan Foundry & Machine Co.

Pettingell Machine Co., 77 Elm St., Amesbury, Mass.

Quickwork—See Smith, H. Collier.

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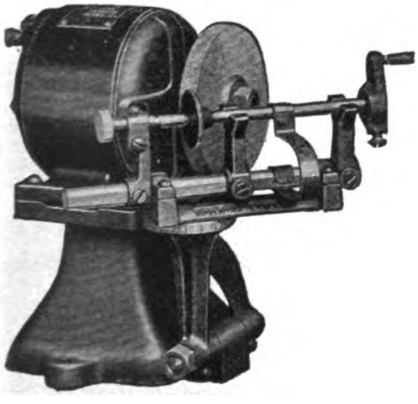

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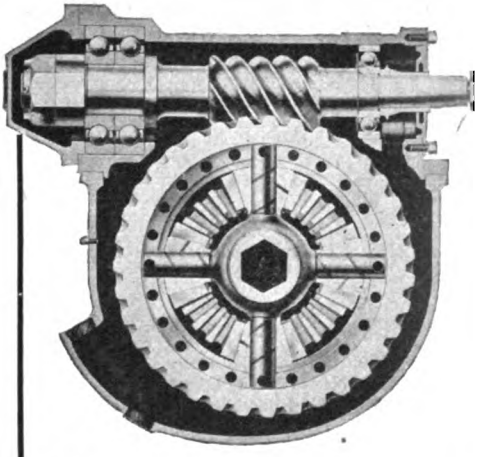

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Scranton & Co., 42 Church St., New Haven, Conn.

Smith, H. Collier, 307-15 Scotten Ave., Detroit, Mich. "Quickwork."

Toledo Machine & Tool Co., 1736 Dorr St., Toledo, O.

Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.

Williams, White & Co., Third Ave. & Euclid St., Moline, Ill.

HAMMERS, RUBBER—See Mallets, Rubber

HAMMERS, Steam

Alliance Machine Co., Alliance, O.

Bement—See Niles-Bement-Pond Co.

Chambersburg Engineering Co., Derbyshire St., Chambersburg, Pa.

Erie Foundry Co., 12th & Cranberry Sts., Erie, Pa.

Massillon Foundry & Machine Co., Massillon, O.

Morgan Engineering Co., Alliance, O.

Niles-Bement-Pond Co., 111 Broadway, New York, N. Y. "Bement."

HAMMOCKS, Baby

D'Eyraud, Louis, 452 W. 16th St., Los Angeles, Cal. (Southern California Distributor for "Gordon" Hammocks.) (See page 247.)

Gordon Motor Crib Co., 219 N. State St., Chicago, Ill.

Hilton Hammock Co., Lyon Bldg., Seattle, Wash.

Perfection Mfg. Co., 2710 N. Leffingwell Ave., St. Louis, Mo. "Rock-a-Bye."

Rock-a-Bye—See Perfection Mfg. Co.

Standley Skid Chain Co., Boone, Iowa. (See page 679.)

HAMPERS, BASKETS and LUNCH BOXES, Touring

(See also Trunks, Automobile; also Stoves, Camp)

Ajax Trunk & Sample Case Co., 420 W. 125th St., New York, N. Y.

Auto Bed Camp Mfg. Co., 2207 Pennsylvania St., Kansas City, Mo.

Bailey-Fitwell Co., 1318 S. Grand Ave., Los Angeles, Cal.

Berg Auto Trunk & Specialty Co., 400 Lafayette St., New York, N. Y. "Campo."

Burlington Basket Co., 600 N. Main St., Burlington, Ia. "Hawkeye."

Campo—See Berg Auto Trunk & Specialty Co.

Hawkeye—See Burlington Basket Co.

Icy-Hot Bottle Co., Second & Elm Sts., Cincinnati, O.

Knickerbocker Case Co., 230 N. Clinton St., Chicago, Ill. "Made-Right."

Made-Right—See Knickerbocker Case Co.

Moats—See Prentiss-Wabers Stove Co.

Orne Auto Diner Co., Everett, Wash.

Prentiss-Wabers Stove Co., 85 Spring St., Grand Rapids, Mich. "Moats."

Refrigo Auto Chest Co., Iron River, Mich.

Warren Leather Goods Co., Worcester, Mass.

Winship, W. W., 71 Summer St., Boston, Mass.

HAND CLAMPS—See Clamps

HAND GRIPS—See Protectors, Doors

HAND HORNS—See Horns, Mechanical

HAND LAMPS—See Lamps, Electric Hand

HAND LANTERNS—See Lights, Electric Flash

HAND PASTE—See Soaps, Hand

HAND PUMPS—See Pumps, Hand

HAND PUNCHES—See Punches, Portable Hand

HAND SCREW MACHINES—See Machines, Screw

HAND SOAPS—See Soaps, Hand

HAND WARMERS—See Warmers, Hand

HAND WOUND CLOCKS—See Clocks, Hand Wound

HANDLE BARS, MOTORCYCLE — See Bars, Motorcycle Handle

HANDLES, BATTERY—See Handles, Storage Battery

HANDLES, Car Door

Aetna Brass & Bronze Co., 1631-35 E. 55th St., Cleveland, O.

American Brass Novelty Co., Grand Haven, Mich.

Anchor—See North & Judd Mfg. Co.

Arcade Mfg. Co., Freeport, Ill.

Attwood Brass Works, Grand Rapids, Mich. (See page 1195.)

Bassick Co., Bridgeport, Conn. (See page 333.)

Carey-McFall Co., 2156 E. Dauphin St., Philadelphia, Pa.

Chicago Cabinet Lock Co., 3341 N. Lincoln St., Chicago, Ill. (See page 585.)

Cincinnati Aluminum Casting Co., Cincinnati, O.

Columbus Brass Co., 540 Dublin Ave., Columbus, O.

Cowles & Co., C., New Haven, Conn. (See page 651.)

Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.

Elektro—See Hughes & Co.

English & Mersick Co., New Haven, Conn. (See pages 623 and 783.)

Enterprise Brass & Plating Co., Sixth & Baymiller Sts., Cincinnati, O.

Ferro Stamping & Mfg. Co., Detroit, Mich. (See page 583.)

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 174 and 175.)

Hancock Mfg. Co., 302 E. Henry St., Charlotte, Mich.

Hughes & Co., D. C., 4042-44 Ravenswood Ave., Chicago, Ill. "Elektro."

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Jonah & George, Little's Ct., Merrimac, Mass.

Keeler Brass Co., 251-71 Godfrey Ave., Grand Rapids, Mich.

Meyer Scale & Hardware Co., 328 Adams St., Newark, N. J.

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HANDLES, Car Door (Continued)

Mitchell Specialty Co., 3631 N. Smedley St., Philadelphia, Pa.
Moline Iron Works, Moline, Ill. (See page 601.)
Monarch Carriage Goods Co., Cincinnati, O. (See page 407.)
North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn. "Anchor."
O'Brien Mfg. Co., Joseph F., 391 Broadway, New York, N. Y.
Pfau Mfg. Co., Cincinnati, O.
Phoenix Lock Works, 321-27 Third Ave., Newark, N. J.
Sargeant Mfg. Co., New & Summit Sts., Newark, N. J.
Shepard Art Metal Co., Detroit, Mich. (See page 515.)
Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
Soss Mfg. Co., Grand Ave. & Bergen St., Brooklyn, N. Y.
Ternstedt Mfg. Co., Artillery St. and Muster Ave., Detroit, Mich. (See page 799.)
Waterbury Mfg. Co., 236 Grand St., Waterbury, Conn.
White Mfg. Co., 155 Cannon St., Bridgeport, Conn.
Williams, Franklin, 263 Jefferson St., Newark, N. J. (See page 163.)
Woodruff & Sons Co., Walter W., Mount Carmel, Conn.
Zagora Mfg. Co., J., 1309 S. Mint St., Charlotte, N. C.

HANDLES, CRANK—See Handles, Starting Crank

HANDLES, DOOR—See Handles, Car Door

HANDLES, Extension Spot Light

Bailey-Drake Co., 1120 S. Michigan Ave., Chicago, Ill. (Sales Department for Detroit Auto Accessories Co., Chicago, Ill. "Jiffy.")
Detroit Auto Accessories Co.—See Bailey-Drake Co.
Jiffy—See Bailey-Drake Co.

HANDLES, Extension Tool

Gardner Specialty Co., Scranton, Pa. "Lownsberry." (See page 491.)
Lownsberry—See Gardner Specialty Co.

HANDLES, SPOT LIGHT—See Handles, Extension Spot Light

HANDLES, Starting Crank

(Rubber, Composition or Fibre Handles for Starting Cranks)

American Hard Rubber Co., 11 Mercer St., New York, N. Y.
American Vulcanized Fibre Co., 573 Equitable Bldg., Wilmington, Del. (See page 415.)
Brandywine Fibre Products Co., 1406 Walnut St., Wilmington, Del. (See page 415.)
Continental Fibre Co., Newark, Del. (See page 263.)
Diamond State Fibre Co., Bridgeport, Pa.
Mechanical Rubber Co., C. P. & Nickel Plate R. R., Cleveland, O.
National Fibre & Insulation Co., Box 281, Yorklyn, Del. "S-S." (See page 415.)
S-S—See National Fibre & Insulation Co.
Wilmington Fibre Specialty Co., Wilmington, Del. (See page 249.)

HANDLES, Storage Battery

Mueller Electric Co., 2139-43 Fairmount Rd., Cleveland, O.

HANGERS and HINGES, Garage Door

Allith-Prouty Co., Danville, Ill. (See page 525.)
Clostite—See Wagner Mfg. Co.
Coburn Trolley Track Mfg. Co., Blanche St., Holyoke, Mass.
Lane Bros. Co., 48 Prospect St., Poughkeepsie, N. Y.
Louden Machinery Co., 3600 Court St., Fairfield, Ia.
McKinney Mfg. Co., Liverpool & Metropolitan Sts., Pittsburgh, Pa. "Pittsburgh."
Myers & Bro. F. E., 1000 Orange St., Ashland, O.
Pittsburgh—See McKinney Mfg. Co.
Porter Co., J. E., 712 Guion St., Ottawa, Ill.
Richards-Wilcox Mfg. Co., Third St. & C. B. & Q. R. R. Tracks, Aurora, Ill. "Slidetite."
Slidetite—See Richards-Wilcox Mfg. Co.
Stanley Works, New Britain, Conn. (See page 499.)
Wagner Mfg. Co., Cedar Rapids, Ia. "Clostite."

HANGERS, Hat

(Clip for hanging hats on robe rails—See also Racks, Hat)

Buckeye—See Central Brass & Fixture Co.
Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."

HANGERS, LICENSE — See Holders, License; also Numbers, License

HANGERS, Pressed Steel Step

(Pressed Steel Step or Running Board Hangers or Brackets; for Forged Hangers—See Forgings, Drop)

Bettcher Stamping Co., 2106 W. 61st St., Cleveland, O. (See page 361.)
Bossert Corp., Utica, N. Y. (See page 897.)
Brewer Tichener Corp., Cortland, N. Y. (See page 567.)
Buffalo Pressed Steel Co., Buffalo, N. Y. (See page 655.)
Cleveland Hardware Co., 4500 Hamilton Ave., Cleveland, O.
Crosby Co., Buffalo, N. Y. (See page 899.)
Detroit Pressed Steel Co., Detroit, Mich. (See page 1203.)
Forsyth Bros., Co., Harvey, Ill. (See page 1067.)
Globe Machine & Stamping Co., 1200-50 W. 76th St., Cleveland, O. (See page 1049.)
Hydraulic Pressed Steel Co. of The Hydraulic Steel Co., Cleveland, O. (See page 439.)
Maryland Metal Products Co., Hagerstown, Md.
Parish Mfg. Co., Reading, Pa. (See page 431.)
Parish & Bingham Corporation, Cleveland, O. (See pages 427 to 430.)
Powell Pressed Steel Co., Hubbard, O. (See page 903.)
Rochester Pressed Steel Co., 35-37 Ford St., Rochester, N. Y.
Transue & Williams Steel Forging Corp., Alliance, O. (See page 895.)

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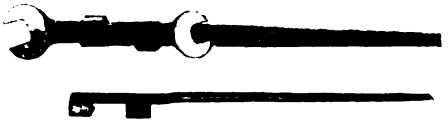
The Lownsbery Extension Handle

(Patent Applied For)



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Speed Reduction:

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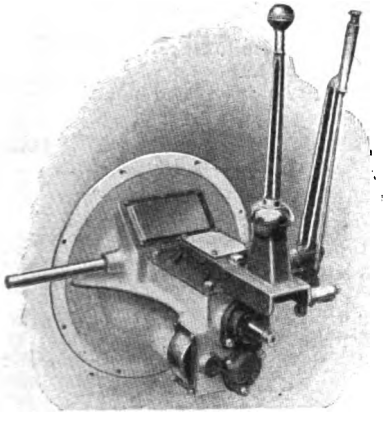
Gears 6-8 Pitch.



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A-K—See Angsten-Kox Co.

Angsten-Kox Co., 221-23 W. Randolph St., Chicago, Ill. "A-K."

Park Mfg. Co., 47 Lagrange St., Worcester, Mass. (See page 677.)

HANGERS, STEP—See Hangers, Pressed Steel Step

HARD RUBBER—See Rubber, Hard

HARDENING COMPOUNDS — See Compounds, Case Hardening

HARDENING FURNACES—See Furnaces, Annealing and Case Hardening

HARDENING MATERIALS — See Compounds, Case Hardening

HARDENING, METAL—See Treating, Heat

HARDNESS TESTING INSTRUMENTS — See Instruments, Metal Testing

HARNESS, WIRING, FOR FORDS—See Sets, Wiring

HASSOCKS, Automobile

(For Metal Foot Rests—See Rests, Foot)

Chicago Hassock Co., 2427 Warren Ave., Chicago, Ill.

HAT HANGERS—See Hangers, Hat

HATCHETS, MOTORISTS—See Axes,

HAT RACKS—See Racks, Hat

HATS, MOTORISTS—See Caps, Motorists

HEADLIGHT BRACKETS—See Brackets, Automatic Headlight

HEADLIGHT BULBS—See Lamps, Miniature Incandescent

HEADLIGHT CONTROLLERS—See Dimmers or Shades, Headlight

HEADLIGHT CONTROLLERS FOR FORDS—See Dimmers or Shades, Headlight; also, Regulators, Headlight

HEADLIGHT DEFLECTORS—See Dimmers or Shades, Headlight

HEADLIGHT DIMMERS—See Dimmers or Shades, Headlight

HEADLIGHT REFLECTORS—See Reflectors, Headlight

HEADLIGHT REGULATORS FOR FORDS —See Regulators, Electric Light

HEADLIGHT SHADES—See Dimmers or Shades, Headlight

HEADLIGHTS, ACETYLENE—See Lamps, or Headlights, Acetylene

HEADLIGHTS, ACETYLENE TRACTOR—See Headlights, Tractor Acetylene

HEADLIGHTS, Electric

(See also Lamps, Electric; for Acetylene Headlights—See Lamps, Acetylene)

Adams-Bagnall Electric Co., 7209 Platt St., Cleveland, O.

American Auto Lamp Co., Union Hill, N. J. "Rialto." (See page 549.)

B. & L. Auto Lamp Co., 103-05 Mott St., New York, N. Y.

Brewn Mfg. Co., Jno. W., Columbus, O. (See page 547.)

Cor-Co-Lite—See Corcoran Lamp Co.

Corcoran Lamp Co., Thomas J., 4900 Spring Grove Ave., Cincinnati, O. "Cor-Co-Lite."

E & J—See Edmunds & Jones Corp.

Edmunds & Jones Corp., 4440 Lawton Ave., Detroit, Mich. "E. & J."

Guide Motor Lamp Mfg. Co., Madison Ave., Cleveland, O.

Hall Lamp Co., C. M., Detroit, Mich. "Solar." (See page 493.)

Hammer Co., E. A., 1339 Euclid Ave., Cleveland, O.

Hankee Electric Mfg. Co., 3330 University Ave., S. E., Minneapolis, Minn.

K-D Lamp Co., Cincinnati, O. (See page 493.)

Neverout—See Rose Mfg. Co.

Rialto—See American Auto Lamp Co.

Rose Mfg. Co., 910 Arch St., Philadelphia, Pa. "Never-out." (See page 711.)

Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) (See page 301.)

Solar—See Hall Lamp Co.

Vesta Battery Corp., 2100 Indiana Ave., Chicago, Ill.

HEADLIGHTS, ELECTRIC FOR FORDS—See Lamps, Electric Head

HEADLIGHTS, ELECTRIC TRACTOR—See Headlights, Tractor Electric

HEADLIGHTS, Tractor Acetylene

American Acetylene Stove Co., 504 Masonic Temple, Minneapolis, Minn.

Corcoran-Victor Co., 712 Reading Rd., Cincinnati, O. "Victor."

Hall Lamp Co., C. M., Detroit, Mich. "Solar." (See page 493.)

Indiana Lamp Co.—See Zinke Co.

Milburn Co., Alexander, 1420-28 W. Baltimore St., Baltimore, Md.

Solar—See Hall Lamp Co.

Superior Lamp Mfg. Co., 143-50 W. 52d St., New York, N. Y.

Victor—See Corcoran-Victor Co.

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Indiana Lamp Co., Connersville, Ind.) (See page 308.)

HEADLIGHTS, Tractor Electric

Guide Motor Lamp Mfg. Co., Madison Ave., Cleveland, O. "Sun-Lite."

Hall Lamp Co., C. M., Detroit, Mich. "Solar." (See page 493.)

Indiana Lamp Co.—See Zinke Co.

Solar—See Hall Lamp Co.

Sun-Lite—See Guide Motor Lamp Mfg. Co.

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Indiana Lamp Co., Connersville, Ind.) (See page 308.)

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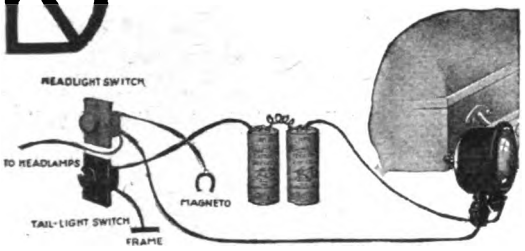
K Line for Ford Cars



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Price, each $2.50
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Diameter of ruby lens.....8"

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Especially designed for all model Ford cars manufactured since 1915, with special one bracket support.

Equipped with the K-D positive lock door, "You can't lose 'em." Bulb is 18 c.p., 9 volt, double wire system.

Price, per pair.....$6.00
Diameter of door.....9"

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Bulb is 2 c.p., 6-8 volt, double wire system unless otherwise ordered.

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Diameter of ruby lens.....8"

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Marvin & Casler Co., 113 Roberts St., Canastota, N. Y.

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Green Engineering Co., Main St. & Burns Ave., Dayton, O.
Laurel Motors Corp., Anderson, Ind. "Roofs." (See page 1179.)
Rajo Motor Co., 1327 Racine St., Racine, Wis.
Roofs—See Laurel Motors Corp.
Speedway Engineering Co., 910 N. Illinois St., Indianapolis, Ind. (See page 1133.)
Wilson, K. R., 10-16 Lock St., Buffalo, N. Y. (See page 611.)

HEADS, Grinder

American Production Machine Works, 965 Woodward Ave., Detroit, Mich. (See page 621.)

HEAT DEFLECTORS FOR FORDS—See Deflectors, Heat

HEAT INDICATING METERS—See Meters, Water Temperature Indicating

HEAT TREATING—See Treating, Heat

HEAT SEALS, MOTOR—See Seals, Motor Heat

HEATED CLOTHING—See Clothing, Electrically Heated, Aviators

HEATERS, Automobile

(See also Gloves, Electrically Heated; also Wheels, Heated Steering; for Electric Foot Warmers—See Warmers, Electric Foot)

Bovey Automobile Heater Co.—See Triple Action Spring Co.
Brackett Auto Heater Co., 4217 Elm St., Milwaukee, Wis.
Brickey, R. S., Aberdeen, S. Dak.
Chicago Flexible Shaft Co., 5600 W. Roosevelt Rd., Chicago, Ill. "Clark."
Clark—See Chicago Flexible Shaft Co.
Cox Brass Mfg. Co., Albany, N. Y. "Mason," "Thermo." (See page 261.)
Elektro—See Hughes & Co.
Eureka Accessory Co., 404-05 Dollar Bank Bldg., Youngstown, O. (See page 645.)
Faraday Co., 746 Chapel St., New Haven, Conn.
Francisco Auto Heater Co., Third & Mt. Pleasant Aves., Columbus, O.
Globe Machine & Stamping Co., 1200-50 W. 76th St., Cleveland, O. (See page 1049.)
H. & D. Co., Crawfordsville, Ind. (See page 959.)
Hill, H. W., 10103 Prospect St., Chicago, Ill. "Utilizer."
Hill Pump Valve Co.—See Zinke Co.
Hughes & Co., D. C., 4642-44 Ravenswood Ave., Chicago, Ill. "Elektro."
Jonas, C. N. & F. W., 608 So. Dearborn St., Chicago, Ill. (Sales Representative for Noble Heater Co., Ft. Wayne, Ind.) (See page 690.)
Joyce Auto Products Co., 2953 S. Michigan Ave., Chicago, Ill. "Superior."
K. P. Products Co., 250 W. 54th St., New York, N. Y.
K. & S. Auto Heater & Lock Co., 3357 S. Michigan Ave., Chicago, Ill. (See page 497.)
Lehman Bros., 10 Bond St., New York, N. Y. "Queen," "Star."
Lytle Auto Heater Co., Memphis, Tenn.
Mason—See Cox Brass Mfg. Co.
Milwaukee Auto Specialty Mfg. Co., 705-15 Chestnut St., Milwaukee, Wis. "Radio."
Neverout—See Rose Mfg. Co.
Noble Heater Co. See Jonas, C. N & F. W.
Ottofy Auto Heater Co., 2652 Locust St., St. Louis, Mo.
Perfection Heater & Mfg. Co., 6556 Carnegie Ave., Cleveland, O. (See page 495.)
Queen—See Lehman Bros.
Radio—See Milwaukee Auto Specialty Co.
Rose Mfg. Co., 910 Arch St., Philadelphia, Pa. "Never-out." (See page 711.)
Sager Co., J. H., 36-38 S. Water St., Rochester, N. Y.
Sexco—See Sexton & Co.
Sexton & Co., C. W., 81 W. Main St., Waynesboro, Pa. "Sexco."
Star—See Lehman Bros.
Superior—See Joyce Auto Products Co.
Taplex Corp., 87 35th St., Brooklyn, N. Y.
Temme—See Triple Action Spring Co.
Thermo—See Cox Brass Mfg. Co.
Triple Action Spring Co., 2810-12 S. Michigan Blvd., Chicago, Ill. "Temme." (Also Sole Distributors for Bovey Automobile Heater Co., Chicago, Ill.) (See page 1097.)
Universal Equipment & Supply Co., Syracuse, N. Y. (See page 727.)
Utility—See Zinke Co.
Utilizer—See Hill, H. W.
Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Hill Pump Valve Co., Chicago, Ill. "Utility.") (See page 309.)

HEATERS, Automobile, for Fords

(Exhaust heaters; for heated steering wheels—See Wheels, Heated Steering)

American Automatic Devices Co., 515 W. Monroe St., Chicago, Ill. (See page 643.)
Bailey—See Riverside Machine Works.
Brickey, R. S., Aberdeen, S. Dak.
Bridgeford—See Home Light Co.
Detroit Auto Heater Co., 3917 Dix Ave., Detroit, Mich.
Douglas Auto-Appliance Co., 2845 Chicago Ave., Minneapolis, Minn. (See page 483.)
Dunham Co., Thos., Aurora, Ill. "Warmford." (See page 167.)
Elektroford—See Hughes & Co.
Hill Pump Valve Co.—See Zinke Co.
Home Light Co., 3353 Milwaukee Ave., Chicago, Ill. "Bridgeford."
Hughes & Co., D. C., 4642-44 Ravenswood Ave., Chicago, Ill "Elektroford."
Joyce Auto Products Co., 2953 S. Michigan Ave., Chicago, Ill. "Superior."
Letts—See Manifold Heater Co.
McClintock, Edward, 221 S. Fifth St., Minneapolis, Minn.
Manifold Heater Co., 30 Main St., Cortland, N. Y. "Letts."
Ottofy Auto Heater Co., 2652 Locust St., St. Louis, Mo.
Perfection Heater & Mfg. Co., 6556 Carnegie Ave., Cleveland, O. (See page 495.)
Riverside Machine Works, 27 S. Jefferson St., New Castle, Pa. "Bailey."
Superior—See Joyce Auto Products Co.
Utility, Jr.—See Zinke Co.
Warmford—See Dunham Co.
Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Hill Pump Valve Co., Chicago, Ill. "Utility Jr.") (See page 309.)

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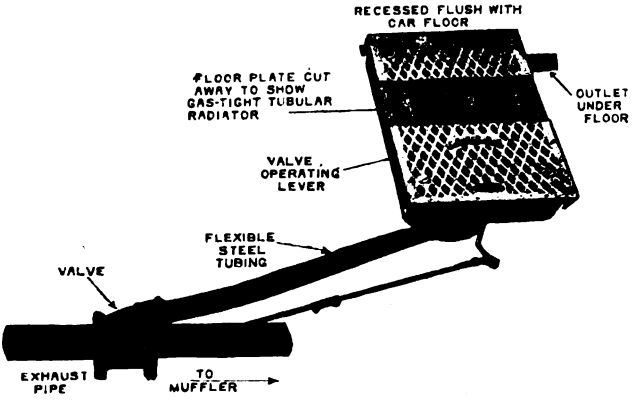

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Dealers: There are scores of car owners in your territory who are potential buyers of Perfection Heaters. They are completely "sold" on them and it only remains for you to let them know you have Perfection Heaters for sale.

There is still opportunity for one wide-awake dealer in every town to share in the profits of Perfection Heater sales this season.

Write TODAY for full information.

The heat is there; why not use it?

PERFECTION MOTOR CAR HEATERS

Some of the cars using Perfection Motor Car Heaters as Standard Equipment on one or more models.

ALLEN
CASE
COLE AERO-EIGHT
COLUMBIA
CROW-ELKHART
DAVIS
DIXIE FLYER
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DU PONT
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GRANT
HANDLEY-KNIGHT
HAYNES
HOLMES
HUDSON
KING
KISSEL
LIBERTY
MAIBOHM
MARMON
MERCER
MITCHELL
MOON
NATIONAL
NORTHWAY MOTORS CORP. (truck cab bodies)
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OLDSMOBILE
PAIGE
PREMIER (all models)
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ROAMER
R. & V. KNIGHT
SCRIPPS-BOOTH
STANDARD EIGHT
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TEMPLAR
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WILLYS-KNIGHT
YELLOW TAXICABS OF CHICAGO

THE PERFECTION HEATER & MFG. CO.

6556 Carnegie Ave. CLEVELAND, OHIO

Manufactured and Distributed in Canada by
RICHARDS-WILCOX CANADIAN CO., Ltd., London, Ontario

"The only Heaters (all models) Tested and Approved by The Underwriters' Laboratories of Chicago"

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HEATERS, EXHAUST—See Heaters, Automobile

HEATERS, GARAGE—See Heaters, Spiral Garage

HEATERS, Glue

Advance Machinery Co., Van Wert, O. "Wetmore."

Globe Machine & Stamping Co., 1200-50 W. 76th St., Cleveland, O. (See page 1049.)

International Electric Co., Indianapolis, Ind.

Oliver Machinery Co., 1025 Clancy St. N. E., Grand Rapids, Mich.

Wetmore—See Advance Machinery Co.

HEATERS, Mixture

(For heating mixture in Carburetor or Manifold to facilitate starting)

Allison Burner Co., **Pioneer Bldg., Seattle,** Wash.

B. K. F. Corp., 20 E. Jackson Blvd., Chicago, Ill. "Thermotral." (See page 963.)

Bear Mfg. Co., E. 17th St. & First Ave., Rock Island, Ill. "Ever-Ready."

Colburn—See Kant-Miss Spark Plug Co.

Comfy—See Hainert & Son.

Electric Intake Heater Co., 117 E. Cortland St., Jackson, Mich.

Ellis Car-Bur-Aid—See Motor Efficiency Corp.

Ever-Ready—See Bear Mfg. Co.

Globe Machine & Stamping Co., 1200-50 W. 76th St., Cleveland, O. "Sure Start." (See page 1049.)

Great Western Removable Body Co., Fourth & Pierce Sts., Omaha, Neb.

Harne & Le Blanc, Camp St., New Orleans, La.

Hainert & Son, F. H., 3043 Nicollet Ave., Minneapolis, Minn. "Comfy."

Ideal Mfg. Co., 1525 Main St., Anderson, Ind.

Ieco—See Interstate Electric Co.

Indus—See Industrial Electric Mfg. Co.

Industrial Electric Mfg. Co., 139 Beaubien St., Detroit, Mich. "Indus."

Instant Starter Co., 211 W. Superior St., Kokomo, Ind. (See page 1043.)

Interstate Electric Co., Baronne & Perdido Sts., New Orleans, La. "Ieco."

Kant-Miss Spark Plug Co., Green Bay, Wis. "Colburn." (See page 727.)

Lepper Mfg. Co., 101 N. Federal Ave., Mason City, Ia.

Lo-See—See Wee Specialty Co.

Losee, J. S., Hebron, Ill. "Protect-O-Motor." (See page 1185.)

Major Coil Protector Co., 370 Vinewood Ave., Detroit, Mich. (See page 497.)

Mechanical Utilities Corp., 5 N. La Salle St., Chicago, Ill.

Motor Efficiency Corp., Real Estate Trust Bldg., Philadelphia, Pa. "Ellis Car-Bur-Aid."

National Automobile Equipment Co., Industrial Bldg., Indianapolis, Ind.

Nelson & Hammond, Cleveland, O. "Thurston."

Neverout—See Rose Mfg. Co.

Olsen—See United States Vaporizer Co.

Perkins Appliance Co., 4 Birnie Ave., Springfield, Mass.

Protect-O-Motor—See Losee, J. S.

Rose Mfg. Co., 910 Arch St., Philadelphia, Pa. "Never-out." (See page 711.)

Staats & Co., Geo., 74 Bayard St., Brooklyn, N. Y. "Stalit."

Stalit—See Staats & Co.

Startit Mfg. Co., 1523-29 E. Washington St., Indianapolis, Ind.

Superheater Mfg. Co.—See Wee Specialty Co.

Sure Start—See Globe Machine & Stamping Co.

Thurston—See Nelson & Hammond.

United States Vaporizer Co., 216 State St., Boston, Mass. "Olsen."

Wee Specialty Co., 1306 Michigan Ave., Chicago, Ill. (Sole Distributors for Superheater Mfg. Co., Hebron, Ill.) "Lo-See."

Wonder Carburetor Heater Co., Mason City, Ia.

HEATERS, Mixture, for Fords

(See also Mixers, Fuel; also Primers, Engine; also Manifolds, Intake; For Kerosene Carburetors, See Carburetors, Kerosene)

Axleford Truck Co., 7311 Crandon Ave., Chicago, Ill. "Red Spot."

B. K. F. Corp., 20 E. Jackson Blvd., Chicago, Ill. "Thermotral." (See page 963.)

Bull Dog—See Reardon Co.

Dunn Mfg. Co., 115 N. 15th St., Clarinda, Ia.

Gardner Auto Products Co., Detroit, Mich. (Sole Distributor for Gardner Carburetor & Brass Works, Detroit, Mich.) (See page 239.)

Gardner Carbureter & Brass Works—See Gardner Auto Products.

Hart-Lawrence Co., 501-10 Broome St., New York, N. Y. (See page 389.)

Hexmen Moto Co., 1512-14 Clark St., Racine, Wis. (See page 199.)

Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass. "Letts." (See page 417.)

Ideal Mfg. Co., 1525 Main St., Anderson, Ind.

Jiffy—See Twin Fire Spark Plug Co.

K. H. K.—See Kay Co.

Kay Co., Kay H., 967 Woodward Ave., Detroit, Mich. "K. H. K." (See pages 83 and 869.)

Letts—See Hill-Smith Metal Goods Co.

Major Coil Protector Co., 370 Vinewood Ave., Detroit, Mich. "Quick-Start." (See page 497.)

Olsen—See United States Vaporizer Co.

Perkins Appliance Co., 4 Birnie Ave., Springfield, Mass.

Perma-Loc Mfg. Co., Wilkes-Barre, Pa. (See page 695.)

Pomeroy Electric Co., 158 E. Main St., Rochester, N. Y.

Quick-Start—See Major Coil Protector Co.

Reardon Co., 209 State St., Peoria, Ill. "Bull Dog."

Red Spot—See Axleford Truck Co.

Startit Mfg. Co., 1523-29 E. Washington St., Indianapolis, Ind.

Taplex Corp., 87 35th St., Brooklyn, N. Y.

Twin Fire Spark Plug Co., 3964 W. Grand River Ave., Detroit, Mich. "Jiffy."

United States Vaporizer Co., 216 State St Boston, Mass. "Olsen."

HEATERS, Radiator

(For keeping radiators from freezing in garage)

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for "Presto" Heaters.) (See page 275.)

Ceaco—See Cobb Electric Appliance Co.

Chase 'Change, Inc., 1328 Broadway, New York, N. Y. "Mayall."

Cobb Electric Appliance Co., 11 Westland Ave., Boston, Mass. "Ceaco."

Consolidated Car Heating Co., Singer Bldg., New York, N. Y.

Edison Electric Appliance Co., 5660 W. Taylor St., Chicago, Ill. "Hughes."

Globe Machine & Stamping Co., 1200-50 W. 76th St., Cleveland, O. (See page 1049.)

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K. & S. Auto Equipment

Our Auto Heater can be used on any gas car.

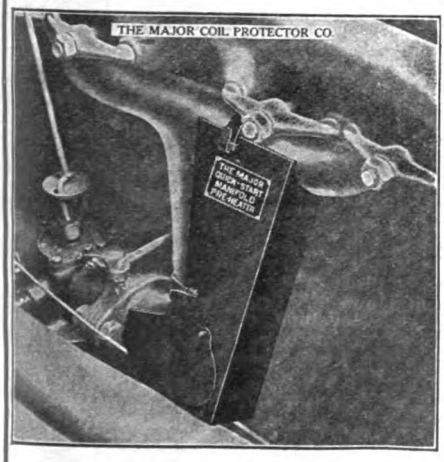
It contains an aluminum heating coil, and, owing to its quick heating action, it develops sufficient heat for comfort on the coldest day while car is running at low speed.

The K. & S. Lock has been pronounced 100% perfect for its quality, simplicity and mechanism. Approved by Underwriters' Laboratory. Reduces insurance.

K&S

K. & S. Auto Shifting Lever Lock locks in neutral position, making it impossible to mesh gears. Models made for all ball and pivot type levers.

K. & S. Auto Heater & Lock Co., Inc.
3357 So. Michigan Ave.
Chicago, U. S. A.



Major Quick-Start Manifold Pre-Heater for Fords. Makes starting easy. Price, $1.75. Also for Chevrolet. The **Major Coil Protector** will make the Ford safe in wet weather, rain or storms. We guarantee you against ignition trouble caused by wet coil terminals. Price, 60 cents.

Dealers—Write for Agency Terms.

Major Coil Protector Co.
370 Vinewood Ave., Detroit, Mich.

EMCO PRODUCTS

Taber Model G Muffler

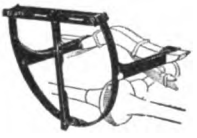
A small, light but very strong muffler that cannot be blown out.

Cast of gray iron in two pieces.

Joints perfectly ground insuring against leak and rattle.

Easily installed.

Price $2.25
West of Rockies..... 2.65



Taber Tire Carrier

Strong, light and durable — guaranteed for life of car.

Toggle locking device makes tire easy to remove but theft proof when locked.

Adopted as standard equipment on Ford enclosed cars.

Prices

F. D. 3—Single Demountable for Fords....$7.00
F. D. 4—Double Demountable for Fords... 8.90
F. C. 3—Single Demountable for Chevrolets. 7.00
F. C. 4—Double Demountable for Chevrolets 8.90

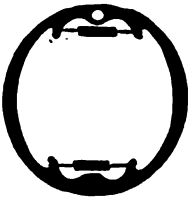
Prices F. O. B. Williamsport, Pa.
Specify Types in Ordering.

Taber Spring Support Clamp

For Chevrolets, Saxons, and all other cars equipped with quarter elliptic springs.

A positive insurance against breakage of spring bolts on all cars equipped with Quarter Elliptic Springs.

Retail price, $2.25 each, $4.50 per pair.



Taber Unlined Brake Shoe for Fords

Comes in one or two pieces as desired.

Made of special formula gray iron casting and reinforced at points of greatest wear.

Every pair tested on a Ford Brake Drum before leaving factory, thus insuring perfect fit without waste. Retail price per set, $1.00.

The Taber Pedal

The most versatile item of its kind on the market—adapts itself to a score of uses.

Note extra long leverage of bottom Thrust Arm.

Automatic Locking device holds Pedal down when in use—a kick of the heel releases it.

Made of special formula gray iron casting and heavy wearing parts of malleable iron to insure against breakage due to sudden strain.

Retail price, each.....$0.35

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The Emco Manufacturing Co.
Main Office & Works: Binghamton, N. Y.

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HEATERS, Radiator (Continued)

Hold-Heet—See Russell Electric Co.
Hughes—See Edison Electric Appliance Co.
Love—See Suburban Lighting Co.
Majestic Electric Development Co., 656 Howard St., San Francisco, Calif.
Mayall—See Chase 'Change.
Metal Specialties Mfg. Co., 338-52 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 547.)
Neverout—See Rose Mfg. Co.
Presto—See Metal Specialties Mfg. Co.
Rose Mfg. Co., 910 Arch St., Philadelphia, Pa. "Never-out." (See page 711.)
Russell Electric Co., 140 W. Austin Ave., Chicago, Ill. "Hold-Heet."
Sharpe Electric Appliance Co., 7502-08 Murphy Bldg., Detroit, Mich. (See page 699.)
Suburban Lighting Co., Toledo, O. "Love."
Taplex Corp., 37 35th St., Brooklyn, N. Y.

HEATERS, Radiators for Fords

Electric Machine Co., 329 W. Ohio St., Indianapolis, Ind. "Elmco."
Elmco—See Electric Machine Co.

HEATERS, Special Garage

Buckeye—See Thornton Co.
Cleveland Heater Co., 1900 W. 112th St., Cleveland, O. "Rex."
Cosy—See Superior Mfg. Co.
Diamond Hardware Mfg. Co., 224 Fourth Ave., Pittsburgh, Pa.
Economy—See Pittsburgh Casting & Heater Co.
Eureka—See Lattner Mfg. Co.
Faraday Co., 746 Chapel St., New Haven, Conn.
Fuller & Warren Co., River & Monroe Sts., Troy, N. Y. "Stewart."
Globe Machine & Stamping Co., 1200-50 W. 76th St., Cleveland, O. "Little Bachelor." (See page 1049.)
Honn, Peter, 629 Fairview Ave., Grand Rapids, Mich.
Lattner Mfg. Co., P. M., 515 F Ave., W., Cedar Rapids, Ia. "Eureka."
Little Bachelor—See Globe Machine & Stamping Co.
Lombardi Motor Car Co., 67-71 Minerva St., Derby, Conn. "Sunbeam."
Masdon Mfg. Co., 93 Massachusetts Ave., Boston, Mass. (See page 1173.)
Neverout—See Rose Mfg. Co.
O. K.—See Rippley Mfg. Co.
Pittsburgh Casting & Heater Co., Scott Pl., Pittsburgh, Pa. "Economy."
Rex—See Cleveland Heater Co.
Richardson & Boynton, 260 Fifth Ave., New York, N. Y.
Rippley Mfg. Co., Grafton, Ill. "O. K."
Rose Mfg. Co., 910 Arch St., Philadelphia, Pa. "Never-out." (See page 711.)
Safety Heater Co., 273 Main St., East Orange, N. J.
Schleit Mfg. Co., W. A., Eastwood St., Syracuse, N. Y. "Wasco."
Sexco—See Sexton & Co.
Sexton & Co., C. W., 81 W. Main St., Waynesboro, Pa. "Sexco."
Scientific Heater Co., 1095 E. 152d St., Cleveland, O.
Stewart—See Fuller & Warren Co.
Sunbeam—See Lombardi Motor Car Co.
Superior Mfg. Co., Said & Magnolia Sts., Pittsburgh (N. S.), Pa. "Cosy."
Thornton Co., F. C., 6712 Union Ave., Cleveland, O. "Buckeye."
Wasco—See Schleit Mfg. Co.

HEEL PLATES—See Plates, Heel, Pedal or Step

HEEL RESTS—See Rests, Heel

HELMETS, Aviators

(See also Clothing, Aviators)

Abercrombie & Fitch Co., Madison Ave. & 45th St., New York, N. Y. "King."
International Coat Co., 114-16 Fifth Ave., New York, N. Y.
King—See Abercrombie & Fitch Co.
Sanders Co., 218½ Indiana Ave., Indianapolis, Ind.
Spalding & Bros., A. G., 126 Nassau St., New York, N. Y.

HIGH SPEED STEEL—See Steel, High Speed

HINGE FORMING MACHINES—See Machines, Hood Hinge Forming

HINGES, Cabinet

(For Heel Boards, Boxes and Cabinets)

Keeler Brass Co., 261-71 Godfrey Ave., Grand Rapids, Mich.
Sargent & Co., Water & Wallace Sts., New Haven, Conn.
Stanley Works, New Britain, Conn. (See page 499.)

HINGES, Door

Aetna Brass & Bronze Co., 1621-35 E. 55th St., Cleveland, O.
Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for "Presto" Hinges.) (See page 275.)
Atwood Vacuum Machine Co., 130 N. Water St., Rockford, Ill.
Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.
E. V. B. Mfg. Co., 342 York St., New Haven, Conn.
Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.
English & Mersick Co., New Haven, Conn. (See pages 623 and 783.)
Gender, Paeschke & Frey Co., 1265-1700 St. Paul Ave., Milwaukee, Wis. (See page 949.)
Konigslow Mfg. Co., Otto E., 3501 Perkins Ave., Cleveland, O.
Metal Specialties Mfg. Co., 338-52 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 547.)
O'Brien Mfg. Co., Joseph F., 391 Broadway, New York, N. Y.
Ochsner & Sons Co., A., 1060 State St., New Haven, Conn.
Parsons Mfg. Co., 5301-47 Bellevue Ave., Detroit, Mich.
Presto—See Metal Specialties Mfg. Co.
Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
Soss Mfg. Co., Grand Ave. & Bergen St., Brooklyn, N. Y.
Stanley Works, New Britain, Conn. (See page 499.)
Ternstedt Mfg. Co., Artillery & Muster Ave., Detroit, Mich. (See page 799.)
Wainwright & Son, W. W., 16th St. & Western Ave., Connersville, Ind.
Woodruff & Sons Co., Walter W., Mount Carmel, Conn.

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HINGES, GARAGE DOOR—See Hangers and Hinges, Garage Door

HINGES, Hood

Bronson Co., Homer D., Beacon Falls, Conn.
Scovill Mfg. Co., Waterbury, Conn. (See page 845.)
Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
Soss Mfg. Co., Grand Ave. & Bergen St., Brooklyn, N. Y.
Waterbury Brass Goods Corp., 160 Washington Ave., Waterbury, Conn.
Woodruff & Sons Co., Walter W., Mount Carmel, Conn.

HINGES, Wind Shield

(For shields on closed cars)

Illinois Brass Mfg. Co., 224-30 W. Ontario St., Chicago, Ill.

HITCHES, Automatic Disengaging Tractor

(A Hitch that automatically uncouples the plow from the tractor when the plow strikes an obstruction. For Tractor Couplers—See Couplers, Tractor; for ordinary Hitches—See Hitches, Tractor; for Quick Stop Hitches—See Hitches, Automatic Quick Stop Tractor)

Greer Automobile Co., Erwin, 1521 Wabash Ave., Chicago, Ill.
McKay—See Towers & Sullivan Mfg. Co.
Meadows Mfg. Co., 91 Bell St., Bloomington, Ill.
Parker Safety Hitch Co., Pittsburgh Bldg., St. Paul, Minn.
Protectometer Co., 330 W. Madison St., Chicago, Ill.
Towers & Sullivan Mfg. Co., E. Fourth St. & N. C. & St. L. Ry., Rome, Ga. "McKay."

HITCHES, Automatic Quick Stop Tractor

(A Hitch that automatically releases the tractor Clutch when the plow strikes an obstruction. For Automatic Disengaging Hitches—See Hitches, Automatic Disengaging; for Tractor Couplers—See Couplers, Tractor; for ordinary Hitches—See Hitches, Tractor)

Taco—See Tractor Appliance Co.
Tractor Appliance Co., 210 Monroe St., New Holstein, Wis. "Taco."

HITCHES, Tractor

Caswell Mfg. Co., Cherokee, Ia.
Cherokee Guide Co., Cherokee, Ia.
Dultmeier Mfg. Co., Manning, Ia. "Jiffey."
Forsythe Mfg. Co., Third St. & Kentucky Ave., Joplin, Mo.
Goodrich Co., Chicago, Ill.
Hausmann Mfg. Co., Long Prairie, Minn.
International Harvester Co. of America, Harvester Bldg., Chicago, Ill.
Jiffey—See Dultmeier Mfg. Co.

HITCHES, TRAILER—See Couplers, Trailer

HOBBING MACHINES — See Machines, Gear Hobbing

HOISTS, BODY—See Hoists, Truck Body

HOISTS, CHAIN—See Blocks and Hoists, Chain

HOISTS, PORTABLE—See Cranes, Portable

HOISTS, Truck Body

(Power and Hand Hoists for Dumping Bodies.)

Archer Iron Works, 24th Pl. & Western Ave., Chicago, Ill. (See page 147.)
Anglaize Hoist & Body Co., New Bremen, O. "Peerless."
Auto Truck Service Co., 946-48 Third St., Milwaukee, Wis. "Giant." (See page 501.)
Auto Truck Steel Body Co., 2028-46 Carroll Ave., Chicago, Ill. "Dailey."
Brownhoist—See Brown Hoisting Machinery Co.
Brown Hoisting Machinery Co., 4402 St. Clair Ave., Cleveland, O. "Brownhoist."
Browning & Co., Victor R., 17701 Lake Shore Blvd., Cleveland, O.
Columbian Steel Tank Co., 1601-21 W. 12th St., Kansas City, Mo.
Dailey—See Auto Truck Steel Body Co.
Eureka—See Lally Commercial Body Co.
Giant—See Auto Truck Service Co.
Graves Co., L. C., Springboro, Pa.
Guaranty Motors Co., Cambridge, Mass. (See page 471.)
Hanger Co., C. F., 6520-24 Carnegie Ave., Cleveland, O.
Heil Co., 1136-40 Montana Ave., Milwaukee, Wis. "Hydro." (See page 147.)
Hydraulic Hoist Mfg. Co., 292 Walnut St., St. Paul, Minn.
Hydro—See Heil Co.
Ideal—See Lally Commercial Body Co.
K & J—See Kilbourne & Jacobs Mfg. Co.
Kilbourne & Jacobs Mfg. Co., Columbus, O. "K. & J." (See page 145.)
King—See Patriot Motors Co.
Lally Commercial Body Co., Paris St., Everett, Mass. "Ideal," "Eureka," "Metropolitan."
Monarch—See Standard Steel Works.
Metropolitan—See Lally Commercial Body Co.
Michigan Bridge & Pipe Co., Lansing, Mich.
National Steel Products Co., 1610 Crystal Ave., Kansas City, Mo. (See page 501.)
Patriot Motors Co., Lincoln, Neb. "King."
Peerless—See Anglaize Hoist & Body Co.
Remson Hoist & Mfg. Co.—See Universal Motor Accessories Co.
Simplex Mfg. Co., Conneautville, Pa.
Standard Steel Works, 1722 Tracy Ave., Kansas City, Mo. "Monarch." (See page 147.)
Steffen-Van Steenwyk Co., 619 W. Seventh St., Sioux City, Iowa. "Woodbury."
T. E. C.—See Truck Engineering Co.
Truck Engineering Co., 7031 Broadway, Cleveland, O. "T. E. C."
Universal Motor Accessories Co., 604 Ridge Arcade, Kansas City, Mo. (Sole Distributors for Remson Hoist & Mfg. Co., Kansas City, Mo.)
Wood Hydraulic Hoist & Body Co., 4196 Bellevue Ave., Detroit, Mich. (See page 501.)
Woodbury—See Steffen-Van Steenwyk Co.
Woonsocket Wagon Mfg. Co., 15 Warrall St., Woonsocket, R. I.
Young—See Horizontal Hydraulic Hoist Co.

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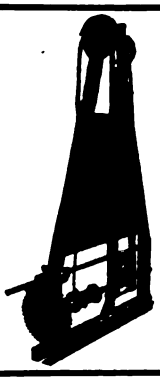
NATIONAL HAND HOISTS



SPEED WITH EASE OF OPERATION—3-TON

The National Hand Hoist is the most efficient 3-ton Hoist on the market. Combines lightness with strength, compactness with capacity, speed with ease. Fits any chassis. Pull is always at right angles with dump body. Occupies but 9 inches space. No arms extend below body when down, nor above body when up.
Will raise 3-ton body to angle of 40 to 45 degrees in two minutes with only 60 lbs. pressure on handle.
Low in first cost—and no expense for up-keep. Fully guaranteed. Write for complete particulars.

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THE GIANT "EASY LIFT" HOIST

The Hoist with all the advantages and none of the disadvantages.

Designed for Any Truck

The Most Practical Hoist Made

The GIANT "Easy Lift" gives twice the lifting power with one-half the lifting resistance. This means less power used for hoisting, less strain on the power plant and time saving operation. It is mechanically constructed, with all the advantages and none of the disadvantages. No oil to freeze—no leak-outs, no oil pumps, no space lost between body and driver's seat—stops automatically and is held up by brake, no racing of Motor while lifting, lighter in weight. Hand Hoist for all trucks up to two ton, Power Hoist from two ton up. For further particulars and price write—

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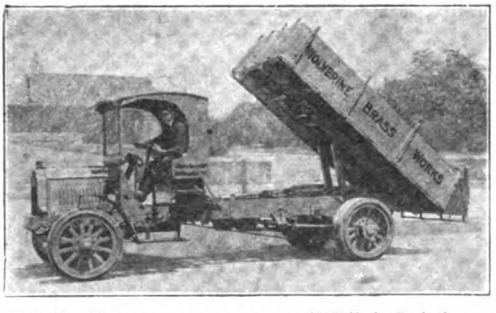
St. Louis, Mo. ..... 1112 N. 9th St.



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HOLD DOWN CLAMPS—See Clamps, Storage Battery Holding Down

HOLDERS, Aircraft Chart

Sperry Gyroscope Co., Manhattan Bridge Plaza, N. Y.

HOLDERS, BARREL—See Holders and Tippers, Oil Can

HOLDERS, Battery

(See also Boxes, Battery)

Patterson—See Stanley & Patterson.
Stanley & Patterson, West & Hubert Sts., New York, N. Y. "Patterson."

HOLDERS, BELT, FOR FORDS — See Guides, Fan Belt

HOLDERS, Bouquet

(For Limousines and other closed cars)

Art Metal Works, Aronson Sq., Newark, N. J. (See page 503.)
Art Work Shop, 700 Main St., Buffalo, N. Y. (See page 503.)
English & Mersick Co., New Haven, Conn. (See pages 623 and 783.)
Hawkes & Co., T. G., Corning, N. Y.
International Silver Co., Meriden, Conn.
Liberty Works, Egg Harbor City, N. J. (See page 549.)
Moswell Mfg. Co., 175 Grand St., New York, N. Y.
O'Brien Mfg. Co., Joseph F., 391 Broadway, New York, N. Y.
Rosco—See Rosen & Co.
Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco."
Watson Co., Mechanics St., Attleboro, Mass.

HOLDERS, BOW—See Holders, Top

HOLDERS, CHART—See Holders, Aircraft Chart

HOLDERS, Clutch for Fords

Standard Farm Implement Co., 110 W. Tenth St., Des Moines, Iowa.

HOLDERS, CRANK—See Holders, Starting Crank

HOLDERS, DOOR—See Holders, Garage Door

HOLDERS, EMBLEM—See Holders, Flag

HOLDERS, Flag, Pennant and Emblem

(See also Flags, Pennants and Emblems)

A. F. H. Co., Dayton, O.
America—See Rouse & Co.
American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "3 A."
Art Metal Works, Aronson Sq., Newark, N. J. (See page 503.)
Biltwell Accessories Co., 401 E. 23rd St., New York, N. Y.
Bon Tour Mfg. Co., Cobleskill, N. Y. "Griptite."
Griptite—See Bon Tour Mfg. Co.
Grillo—See Morris & Menkhaus Mfg. Co.
H. K. Metal Products Co., 60 Grand St., New York, N. Y. "Liberty."
Hudson Products Co., 44 E. 23d St., New York, N. Y.
Jones Co., Ira A., 17 N. Wabash Ave., Chicago, Ill. "Old Glory."
Kallgren, Geo. H., Iron Exchange Bldg., Minneapolis, Minn. "Safety First."
Liberty—See H. K. Metal Products Co.
Modern Tool & Stamping Co., 311-17 S. Clinton St., Chicago, Ill.
Morris & Menkhaus Mfg. Co., 34 E. Court St., Cincinnati, O. "Grillo."
Neverout—See Rose Mfg. Co.
Old Glory—See Jones Co.
Richardson Ball Bearing Skate Co., 154 E. Erie St., Chicago, Ill.
Rose Mfg. Co., 910 Arch St., Philadelphia, Pa. "Never-out." (See page 711.)
Rouse & Co., H. B., 2314-16 Ward St., Chicago, Ill. "America."
Safety First—See Kallgren, Geo. H.
Stenman Wire Specialty Co., 18 Grafton St., Worcester, Mass.
Thomson Mfg. Co., S. H., Fourth & St. Clair Sts., Dayton, O.
3 A—See American Automobile Accessories Co.
Utilities Sales Association, 607 W. 43d St., New York, N. Y.

HOLDERS, Flag, Pennant and Emblem, for Fords

Morris & Menkhaus Mfg. Co., 34 E. Court St., Cincinnati, O. "Wonermor."
Wonermor—See Morris & Menkhaus Mfg. Co.

HOLDERS, GARAGE DOOR—See Holders and Openers, Garage Door

HOLDERS, GENERATOR — See Stands, Generator

HOLDERS, Lathe and Planer Tool

(See also Tools, Lathe & Planer)

Agrippa—See Williams & Co.
American Tool & Machine Co., 10 High St., Boston, Mass.
Armstrong Bros. Tool Co., 304 N. Francisco Ave., Chicago, Ill. (See page 1007.)
Bown Machine Co., Battle Creek, Mich.
Carr—See Thompson & Son Co.
Champion—See Western Tool & Mfg. Co.
Cleveland National Machine Co., 1366 W. 70th St., Cleveland, O.
Cogswell Mfg. Co., 35 Hall St., Springfield, Mass.
Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.
O. K. Tool Holder Co., Shelton, Conn.
Premier Machine Tool Works, 1031 Broadway, Albany, N. Y.
Railway Specialty Co., Atchison, Kans. "Rysco."
Ready Tool Co., 624 Iranistan Ave., Bridgeport, Conn. "Red-E."
Red-E—See Ready Tool Co.
Rysco—See Railway Specialty Co.
Thompson & Son Co., Henry G., 277 Chapel St., New Haven, Conn. "Carr."
Union Tool Co., 48 E. River St., Orange, Mass.
Western Tool & Mfg. Co., Springfield, O. "Champion."
Williams & Co., J. H., 38 Richards St., Brooklyn, N. Y. "Agrippa." (See page 1081.)

HOLDERS, License

Affa Specialty Co., 34 Southbridge St., Worcester, Mass.
American Simplex Co., 2101 W. 16th St., Anderson, Ind.

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CONSISTING OF

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RONSON
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offer you the most complete assortment of beautiful radiator ornaments ever designed. Each one is a masterpiece in modeling and finish. Send for illustrated catalog.

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License Plate Holder

A Distinctive—One Piece Boltless Holder

Simplicity is the basis of this holder. Can be put on or taken off entirely by hand. For the average motorist it does away with rusty bolts and bothersome noises. This holder will fit almost every standard make of car. Just slip holder through slot in plate, then through slot in bracket—give quarter turn and your license plate is on to stay. Absolutely locked until you reverse the operation to take it off.

These holders are mounted on an attractive counter display card having 25 pairs on each card that retail at 50c a pair or $12.50 list price a card.

We would be very glad to ship you a card through your jobber. Just send us the order and mention your jobber's name. Sample pair by mail for 35c.

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Highland Building Pittsburgh, Pa.

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HOLDERS, License (Continued)

Auto License Holder Co., Middlebury, Vt.
Automobile License Indicator Co., Lewisburg, Tenn. "Perfection," "Standard."
Bailey-Fitwell Co., 1318 S. Grand Ave., Los Angeles, Cal.
Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O.
Clamert Mfg. Co., Third & Ross Sts., Pittsburgh, Pa.
Cornelius-Browning Auto Co., 817-19 Jefferson Ave., Toledo, O. "Perfect."
Dow Wire & Iron Works, Louisville, Ky. (See page 157.)
Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.
Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.
Ideal Clamp Mfg. Co., 198-202 Bradford St., Brooklyn, N. Y. (See page 241.)
Lambert Mfg. Co., Highland Bldg., Pittsburgh, Pa. (See page 503.)
Metal Stamping Co., 18th St., & East Ave., Long Island City, N. Y.
Modern Tool & Stamping Co., 811-17 S. Clinton St., Chicago, Ill.
Neverout—See Rose Mfg. Co.
Perfect—See Cornelius-Browning Auto Co.
Perfection—See Automobile License Indicator Co.
Rose Mfg. Co., 910 Arch St., Philadelphia, Pa. "Never-out." (See page 711.)
Stafford Auto Lamp & Number Co., 1475 Michigan Ave., Chicago, Ill.
Standard—See Automobile License Indicator Co.
Whitehouse Mfg. Co., 42 Elm St., Newark, N. J. (See page 637.)

HOLDERS, License, for Fords

(Holders or carriers for license plate for front of car)

Affa Specialty Co., 34 Southbridge St., Worcester, Mass.
Apco Mfg. Co., Providence, R. I.
Armand Machine Works, 442-59 N. Wells St., Chicago, Ill. (See page 81.)
BB—See Bayne Mfg. Co.
Badger Mfg. Corp., Milwaukee, Wis. (See page 173.)
Bayne Mfg. Co., Bushnell, Ill. "BB." (See page 725.)
Boyd, C. C., Pulaski, Pa. "Little Giant."
Brocksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.
Dottl Mfg. Co., 128 S. Pinckney St., Madison, Wis.
Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.
Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.
Fracto Specialty Co., 161 Massachusetts Ave., Boston, Mass.
Goodrich-Lenhart Mfg. Co., Hamburg, Pa. (See page 721.)
Humboldt—See Republic Auto Parts Co.
Jofer—See Peoria Sheet Metal Works.
Lambert Mfg. Co., Highland Bldg., Pittsburgh, Pa. (See page 503.)
Little Giant—See Boyd, C. C.
Martin & Co., Edward, 28 S. Clinton St., Chicago, Ill. "Perfection."
Metal Specialties Co., Attleboro, Mass.
Metal Stamping Co., 18th St. & East Ave., Long Island City, N. Y.
Midway Mechanical Co., St. Paul, Minn. (See page 667.)
Modern Tool & Stamping Co., 811-17 S. Clinton St., Chicago, Ill.
Morris & Menkhaus Mfg. Co., 34 E. Court St., Cincinnati, O.
Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)
Neverout—See Rose Mfg. Co.
Oakes Co., Indianapolis, Ind. (See page 405.)
Peoria Sheet Metal Works, 3026 S. Adams St., Peoria, Ill. "Jofer."
Perfection—See Martin & Co.
Republic Auto Parts Co., 31-35 Tenth St., Long Island City, N. Y. "Humboldt."
Rose Mfg. Co., 910 Arch St., Philadelphia, Pa. "Never-out." (See page 711.)
W-A—See Whetstone & Co.
Whetstone & Co., John H., Court St., Lapeer, Mich. "W-A."
Whitehouse Mfg. Co., 42 Elm St., Newark, N. J. (See page 637.)
Worthington, A. P., 700 N. Main St., Los Angeles, Cal.

HOLDERS, LUGGAGE—See Holders, Suit Case

HOLDERS, Magneto Plug for Fords

Stout's Mfg. Co., Lockport, N. Y. (See page 1065.)

HOLDERS, Oil Can

(For carrying oil cans or others on car)

Becco—See Michigan Motor Specialties Co.
Buffum Tool Co., Louisiana, Mo. (See page 529.)
Ferro Stamping & Mfg. Co., Detroit, Mich. (See page 583.)
Halladay Co., L. P., 501 N. Monroe St., Streator, Ill. "Reliable."
Mayo-Skinner Mfg. Co. 2115 Elston Ave., Chicago, Ill. "Security."
Michigan Motor Specialties Co., 120 Mt. Elliott Ave., Detroit, Mich. "Becco."
Reliable—See Halladay Co.
Security—See Mayo-Skinner Mfg. Co.
Spiro Mfg. Co., C., 68-72 E. 131st St., New York, N. Y. "Uniq."
Uniq—See Spiro Mfg. Co.

HOLDERS or TIPPERS, Oil Can and Barrel

(For holding either round or square oil cans in garage—so arranged that the can may be readily tipped and oil poured from it without lifting it)

Halladay Co., L. P., 501 N. Monroe St., Streator, Ill.

HOLDERS and OPENERS, Garage Door

(For electric garage door openers—See Openers, Electric)

Allith-Prouty Co., Danville, Ill. "Electromatic." (See page 525.)
Electromatic—See Allith-Prouty Co.
Griffin Mfg. Co., 15th & Cherry Sts., Erie, Pa.
Lindberg Co., J. F., 501 N. La Salle St., Chicago, Ill.

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THE JULIUS J. BANTLIN COMPANY
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Manufacturers of
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Leather and Web Tire Straps
Hood Straps—Emergency Mud Hooks
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Write for Catalog and Price List

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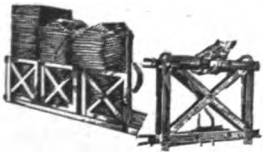

The last word in simplicity and convenience. Takes all the luggage needed without crowding tonneau. On or off in an instant, without tools. Folds flat and stows under seat cushion. Ask your dealer or send for circular.

LIST PRICE, EACH, $4.50

JOBBERS:-Write for Discounts

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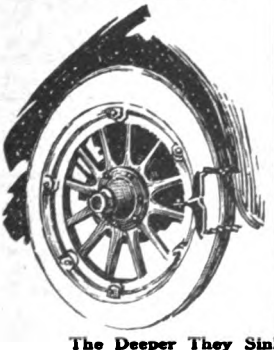

The Deeper They Sink, the Firmer They Grip
No need to pay $10.00 to be hauled out of a hole. It's cheaper to carry a $4.50 pair of "Syde-Grippers." They go on or off in a moment without trouble or tools. Perfect for all anti-skid purposes, but used in addition to chains by many who are wedded to the chain idea.
Make Even the Smallest Car a Giant of Strength in Mud

"THE BERSTED"
Double Row Ball Thrust Bearing.
For Ford and Chevrolet Cars.

Perfectly balanced, carries load on two rows of balls, keeps gears perfectly meshed, insures quiet running with least wear. Ask your dealer or send for circular.

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HOLDERS and OPENERS, Garage Door (Continued)

Miller & Son Co., Geo. B., Waterloo, Iowa.
National Mfg. Co., Sterling, Ill.
Perkins—See Miller & Son Co.
Phoenix Mfg. Co., Milwaukee, Wis.
Richards-Wilcox Mfg. Co., Third St. & C. B. & I. R. R. Tracks, Aurora, Ill. "Slidetite."
Rixson Co., Oscar C., 501 S. Jefferson St., Chicago, Ill.
Shelby Spring Hinge Co., Shelby, Ohio.
Slidetite—See Richards-Wilcox Mfg. Co.
Stanley Works, New Britain, Conn. (See page 499.)

HOLDERS, PENNANT—See Holders, Flag

HOLDERS, PLANER TOOL—See Holders, Lathe and Planer Tool

HOLDERS, SPARE WHEEL, —See Holders or Carriers, Spare Wheel

HOLDERS, Starting Crank

(Leather strap and holder to prevent starting crank swinging or dropping down)

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 321.)
B E Mfg. Co., 18 W. 18th St., New York, N. Y. "Bemco." (See page 321.)
Bailey-Fitwell Co., 1318 S. Grand Ave., Los Angeles, Cal.
Bantlin Co., Julius J., Cincinnati, O. (See page 505.)
Bemco—See B. E. Mfg. Co.
Boston Leather Specialties Co., 30 Merrimac St., Boston, Mass.
Calsco—See Chicago Auto Leather Specialty Co.
Campbell—See Perkins-Campbell Co.
Carter Co., George R., Connersville, Ind.
Chicago Auto Leather Specialty Co., 6637 S. Halsted St., Chicago, Ill. "Calsco."
Chicago Rawhide Mfg. Co., 1301 Elston Ave., Chicago, Ill.
Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.
Detroit Leather Works, 863 E. Lafayette Blvd., Detroit, Mich. (See page 125.)
Economy Stay Co., Jefferson City, Mo.
Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for "G. & K." Holders.) (See page 125.)
Feeser Co., Frank S., 1102 Prospect St., Indianapolis, Ind. "Superior."
Fernald Mfg. Co., North East, Pa. "Jiffy."
Fitzwell—See Niagara Fabric Mfg. Co.
G & K—See Graton & Knight Mfg. Co.
Graton & Knight Mfg. Co., Worcester, Mass. "G. & K." (See page 119.)
Hager & Son, Chas., 1926 Broadway, New York, N. Y.
Hide, Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind. (See page 121.)
Jiffy—See Fernald Mfg. Co.
Leather Parts Co., 1619-21 Prospect St., Indianapolis, Ind.
Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 321.)
Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."
Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. "Campbell." (See page 317.)
Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.
Rose Mfg. Co., Frank, Hastings, Neb. (See page 751.)
Specialty Harness Co., Dayton, Va.
Stevens & Bro., A. A., 1234 Wabash Ave., Chicago, Ill.
Superior—See Feeser Co.
Williamsport Leather Goods Co., 944 Nichols Pl., Williamsport, Pa. "Wsco."
Wsco—See Williamsport Leather Co.

HOLDERS, Starting Crank, for Fords

(Metal, leather or fabric holder for keeping starting crank up out of mud and dirt and also to prevent rattling)

B E Mfg. Co., 18 W. 18th St., New York, N. Y. "Bemco." (See page 321.)
Bemco—See B. E. Mfg. Co.
Boston Leather Specialties, 30 Merrimac St., Boston, Mass.
Detroit Leather Works, 141-43 E. Lafayette Blvd., Detroit, Mich. (See page 125.)
Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for "G. & K." Holders.) (See page 125.)
G. & K.—See Graton & Knight Mfg. Co.
Graton & Knight Mfg. Co., Worcester, Mass. "G. & K." (See page 119.)
King Mfg. Co., 206 Washington St., Brookline, Mass.
King Pressed Steel & Mfg. Co., 13 Hawthorne St., Newton, Mass.
Oakes Co., Indianapolis, Ind. (See page 405.)
Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. (See page 317.)
Rose Mfg. Co., Frank, Hastings, Neb. (See page 751.)
Whitehouse Mfg. Co., 42 Elm St., Newark, N. J. (See page 637.)

HOLDERS, Suit Case or Luggage

(For attaching to running board)

Ajax Trunk & Sample Case Co., 420 W. 125th St., New York, N. Y.
Anton & Ackerman Co., 132-34 Kansas Ave., Topeka, Kans.
Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. (See page 81.)
Auto Bed Camp Mfg. Co., 2207 Pennsylvania St., Kansas City, Mo.
Auto Luggage Carrier Co., Adams, N. Y.
Badger Mfg. Corp., Milwaukee, Wis. "Handy." (See page 173.)
Bersted Mfg. Co., 765 Mather St., Chicago, Ill. "Kompak." (See page 505.)
Blake Mfg. Co., South Bend, Ind. "Clamplock."
Boyle Mfg. Co., Los Angeles, Cal. "E-Z," "Sure Grip." (See page 1189.)
Brocksmith Mfg. Co., 1856-60 Menard St., St Louis, Mo.
Brown Stamping Co., Toledo, O.
Buffington & Co., C. A., Berkshire, N. Y.
Bulldog Luggage Guard Co., 39 Elm St., Nashua, N. H.
Clamplock—See Blake Mfg. Co.
E-Z—See Boyle Mfg. Co.
Ekern Bros. Mfg. Co., Flandreau, S. Dak.
Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 174 and 175.)

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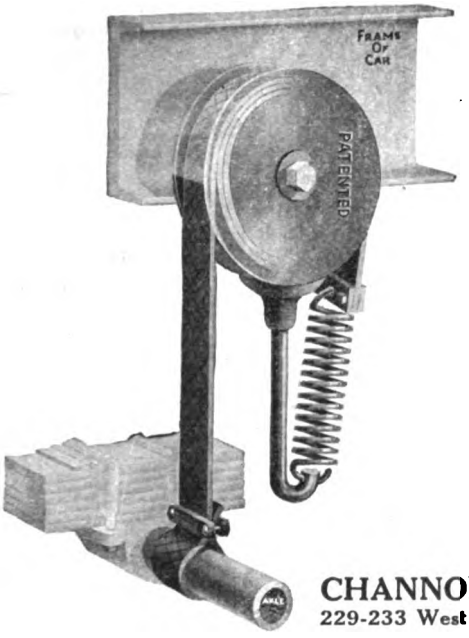


"Bull Dog" Bounce Absorber

It stops the bounce and keeps you on the seat; prevents breaking of springs and many other troubles. No metal parts to wear out and no oiling necessary. Can be easily adjusted to different weights of cars.

By simply loosening cap screw or changing tension of springs.

Easily fitted to cars without drilling holes in the frames. The demand is created: Better take advantage of the best selling accessory on the market and write us at once

Price Per Set of (four).....$24.00
Price Per Pair (two)..... 12.00

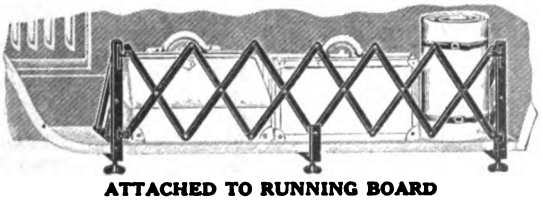
CHANNON-HUGHSON COMPANY
229-233 West Erie Street CHICAGO, U. S. A.

Star Adjustable Luggage Carrier

RUNNING BOARD TYPE

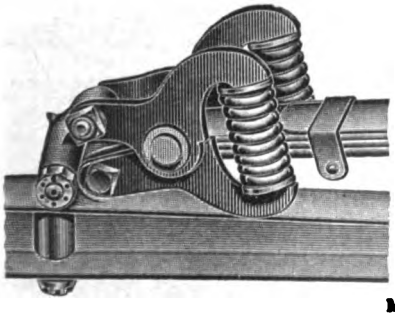
Fastens to running board by thumb screw as shown. Easily attached or detached in a moment. Can be folded and carried under seat or in tool box when not in use. Black enamel finish. Fits any car.

Each $6.00



ATTACHED TO RUNNING BOARD

Star Shock Absorbers—For Ford Cars



Star W-X Shock Absorber provides four cushions of comfort. One for each corner of your car.

Easy to attach. You remove only the shackles and put the W-X in their place.

Per set (of four) list.....$8.00

Also manufacture other accessories: Radius Rod Supports, Rear Axle Truss Rods, Bench and Power Grinders.

Write for Discounts

Manufacturers

STAR SPECIALTY MANUFACTURING CO.

CHICAGO 227 West Erie Street ILLINOIS

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HOLDERS, Suit Case or Luggage (Continued)

Globe Machine & Stamping Co., 1200-50 W. 76th St., Cleveland, O. (See page 1049.)

Grip-Tite Holder Co., Norwich, N. Y.

Halladay Co., L. P., 501 N. Monroe St., Streator, Ill.

Handy—See Badger Mfg. Corp.

Ideal—See Schwenn Iron Works.

Jay & Dee Specialty Co., 41 Park Row, New York, N. Y.

Kompak—See Bersted Mfg. Co.

Lug-Rac—See Xcel Specialty Co.

Marquette Mfg. Co., St. Paul, Minn. (See page 511.)

Marvel Clamp Co., 76 First St., San Francisco, Cal.

Mill City Co., Minneapolis, Minn.

National Carrier Co., 707 Second Ave., S., Minneapolis, Minn.

National Mfg. Co., 834 E. Seventh St., St. Paul, Minn. (See page 503.)

Pandolfo Mfg. Co., St. Cloud, Minn. (See page 157.)

Rust Mfg. Co., 1201 Fourth St., S., Minneapolis, Minn.

Schwenn Iron Works, William, 822-32 Lexington Ave., Brooklyn, N. Y. "Ideal." (See page 877.)

Standley Skid Chain Co., Boone, Ia. (See page 679.)

Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 507.)

Sure Grip—See Boyle Mfg. Co.

Tourist Auto Equipment Co., Dahlgren, Ill.

Viktry Sales Co., 389 Fifth St., Milwaukee, Wis. (See page 770.)

Xcel Specialty Co., 38 Lewis Blk., Buffalo, N. Y. "Lug-Rac."

HOLDERS, Tire

(For carrying spare tires on cars, including Demountable Rims)

Amco—See Chicago Electric Mfg. Co.

American Traction Ring Co., 108-10 W. 53rd St., New York, N. Y.

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for "Victor," "Duplex" and "Simplex" Holders.) (See page 275.)

Attwood Brass Works, Grand Rapids, Mich. (See page 1195.)

Au-To Compressor Co., Wilmington, O. "Oro."

B. & A. Machine Co., 203 W. 75th St., New York, N. Y. "Spook American." (See page 1099.)

Badger Mfg. Corp., Milwaukee, Wis. (See page 173.)

Boko—See Defiance Welding Co.

Buckeye—See Central Brass & Fixture Co.

Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."

Clayton Co., 136 W. 52d St., New York, N. Y. "Hoover."

Climax—See Strifler & Shannon.

Dayton Wire Wheel Co., 325 Miami Chapel Rd., Dayton, O.

Defiance Welding Co., Defiance Bldg., Defiance, O. "Boko."

Detroit Carrier & Mfg. Co., Detroit, Mich. (See page 1103.)

Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.

Dow Wire & Iron Works, Louisville, Ky. (See page 157.)

Duplex—See International Stamping Co.

Eberhard Mfg. Co., 2784 Tennyson Rd., [illegible] land, O.

Emco Mfg. Co., 4 Griswold St., Binghamton, N. Y. "Taber." (See page 497.)

Erp—See Sedgwick Sales Co.

Essandee Corp., 330 W. 16th St., Los Angeles, Cal. (See page 645.)

Ferris Auto-Carrier Co., 29 S. Seventh St., Philadelphia, Pa. "Quick-Action."

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 174 and 175.)

Halladay Co., L. P., 501 N. Monroe St., Streator, Ill.

Hercules—See Western Brass Mfg. Works.

Highton & Sons Co., Wm., Nashua, N. H.

Hoover—See Clayton Co.

Hoover Spring Co., 201-29 Franklin St., San Francisco, Cal.

Horrocks Iron Works, 234 N. Broad St., Philadelphia, Pa. "Liberty."

Interlock Hardware Co., 242-48 York St., New Haven, Conn.

International Metal Mfg. Co., Wayne Ave. & Berkley St., Philadelphia, Pa. "Yankee."

International Stamping Co., 400 Leavitt St., Chicago, Ill. "Victor," "Duplex," "Simplex." (See page 1103.)

Liberty—See Horrocks Iron Works.

McKinnon Dash Co., Buffalo, N. Y. (See page 831.)

New Era Spring & Specialty Co., 51-55 Cottage Grove Ave. S. W., Grand Rapids, Mich. "Sly Perfect."

Oro—See Au-To Compressor Co.

Packer Auto Specialty Co., 1420 S. Michigan Ave., Chicago, Ill. "Ray."

Quick-Action—See Ferris Auto-Carrier Co.

Ray—See Packer Auto Specialty Co.

Sedgwick Sales Co., 1405 Sedgwick Ave., New York, N. Y. "Erp." (See pages 509 and 510.)

Simplex—See International Stamping Co.

Sjoholm, N. P., 11 Westmoreland Pl., St. Louis, Mo.

Sly Perfect—See New Era Spring & Specialty Co.

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.

Smith & Gregory, 121-23 W. 52d St., New York, N. Y.

Spook American—See B. & A. Machine Co.

Strifler & Shannon, 1810-12 W. Pico St., Los Angeles, Cal. "Climax." (See page 513.)

Taber—See Emco Mfg. Co.

Trex—See Trexler Co.

Trexler Co., 1418 Walnut St., Philadelphia, Pa. (Sole Distributors for Twinlock Co., Philadelphia, Pa. "Trex.") (See page 925.)

Twinlock Co.—See Trexler Co.

Victor—See International Stamping Co.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. "Hercules." (See page 1097.)

Whitehouse Mfg. Co., 42 Elm St., Newark, N. J. (See page 637.)

Yankee—See International Metal Mfg. Co.

HOLDERS, Tire, for Fords

(For carrying spare tires on cars, including demountable rim and wheel carriers)

American Metal Parts Mfg. Co.—See Fulton Co.

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for "Simplex" and "Duplex" Holders.) (See page 275.)

Attwood Brass Works, Sixth St. and Front Ave., Grand Rapids, Mich. (See page 1195.)

Au-To Compressor Co., Wilmington, O. "Oro."

Auto Forge Sales Co., 80 King Ave., Columbus, O. "Universal."

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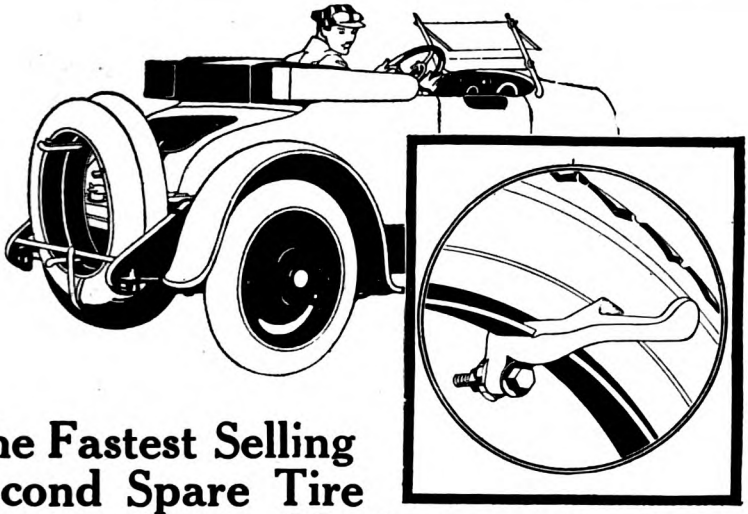

This illustrates one of the three units of the Erp Spare Rim Carrier which completes the set. Securely bolted to tire rack found on the car. Second spare removed instantly by turn of 1 nut.

The Fastest Selling Second Spare Tire Carrier On the Market

Every motor car owner, who has a car equipped to carry only one spare tire, wants an Erp Rim Carrier set as soon as he sees it.

Made to Fit Any Size Rim or Tire

The bolt and nut construction is so simple that a tire can be attached or detached without any special tools in one minute; an ordinary wrench is all that's needed.

The Erp Spare Rim Carrier has the three point suspension, inside grip so that there can be no chafing at any point.

The complete set comes in a box no larger than a pound box of candy.

The Complete Set for $3.50

($4.00 West of Rockies)

There are no straps, no rattle, no chafing and no soft spots on a tire which is carried by this device.

Dealers: If you want live business getting literature send your request direct to us on your letterhead. Sent free

Manufactured by

SEDGWICK SALES COMPANY

1405 Sedgwick Ave., New York City

(See Other Side for Jobbers)

Erp Spare Rim Carrier

"CARRY TWO SPARES AND BE SAFE"

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DEALERS: Order the Erp Spare Rim Carrier From Your Nearest Jobber

For your convenience we show here the jobbers in your territory that carry the Erp Spare Rim Carrier in stock. This accessory has proven to be the fastest selling article that accessory dealers carry. If you are not stocking it ask your nearest jobber about its merits and selling possibilities.

Sales Representatives and Distributors

Allied Industries, Inc.
283 Minna St., San Francisco, for California, Oregon, Idaho, Washington, Nevada, Arizona.

The Rubber Sales Co.
53 West Jackson Blvd., Chicago, for Illinois, Indiana, Michigan, Wisconsin.

Jobbers

ALABAMA

Birmingham—Moore Handley Hardware Co.

ARIZONA

Phoenix—Motor Supply Company.

CALIFORNIA

Fresno—Inland Iron Company.
Los Angeles—Weinstock Nichols Co.
Chanslor & Lyon Co.
E. A. Featherstone Co.
Harper & Reynolds Co.
Sacramento—Kimball-Upson Co.
San Diego—Motor Hdware. & Equip. Co.
Gavin Williams Company.
San Francisco — Weinstock Nichols Co.
Chanslor & Lyon Co.
McCoy Motor Supply Co.
Millard & Company.
United Auto Tire & Supply Co.

CONNECTICUT

Bridgeport—J. H. Cohen & Co.
Meriden — Griswold - Richmond & Glock Co.
New Haven—Horton Gallo Creamer Co.

COLORADO

Denver—B. K. Sweeney Elec. Co.
Foster Auto Supply Co.

DISTRICT OF COLUMBIA

Washington—Federal Auto Sup. Co.

FLORIDA

Jacksonville—Morgan Motor Car Supply Co.
Consolidated Grocery Co.
Tampa—Knight & Wall Co.
Wholesale Automobile Supply House.
C. W. Greene Company.

GEORGIA

Atlanta—Julian Prade Auto Supply Co.
Augusta—Automotive Supply Company.
Columbus—W. E. Cody Company.

ILLINOIS

Chicago—Beckley Ralston Coompany.
Chicago Auto Supply House.
Chicago Auto Equipment Co., Inc.
Guaranteed Auto Parts Company.
Sheridan Auto Supply Co.
Motor Car Supply Company.
Fred Allen Auto Supply Co.
Walters Auto Supply Co.
Elec. Appliance Co.
Carleston Williams Co.
Central Electric Co.
Empire Motor Supply Co.
Auto Tire Sales Co.
Surplus Auto Supply Co.
Quincy—Reid Motor Supply Company.

INDIANA

Ft. Wayne—National Mill Supply Co.

IOWA

Cedar Rapids—Western Auto Specialties Company.

KANSAS

Hutchinson—Auto Supply Co.
Salina—Watson Weldon Motor Supply Co.

KENTUCKY

Glasgow—Dickinson Brothers.
Lexington—L. Gay Strode Co.
Louisville—Harbison & Gathright.

LOUISIANA

Alexandria—Rapides Auto Supply Co.
New Orleans—Shuler Auto Supply Company, Inc.

Jobbers

MAINE

Auburn—Darling Automobile Co.
Bangor—N. H. Bragg & Sons.
Portland—James Bailey Company.

MARYLAND

Baltimore—J. R. Hunt Company.
Baltimore Hub Wheel & Mfg. Co

MASSACHUSETTS

Boston—Wetmore Savage Company.
Linscott Supply Company.
Butts & Ordway.
Geo. Collins & Co., Inc.
Decatur & Hopkins Co.
Standard Tire & Rubber Co.
Holyoke—J. Russell & Co.
Springfield—J. G. Riga & Sons Co., Inc.
Worcester—Alsten & Goulding Co.
Motor Tire Service Co.

MICHIGAN

Detroit—Watkins & Radcliffe Co.
Lansing—Allen Sparks Company.

MINNESOTA

Duluth—Duluth Auto Supply Co.
St. Paul—C. J. Smith & Co., Inc.

MISSOURI

Kansas City—Faeth Iron Company.
Equipment Company.
Bonniwell Calvin Co.
Kansas City Auto Supply Co.
St. Louis—Sligo Iron Store Co.
Fred Campbell Auto Supply Co.
Koochook Company.

MONTANA

Billings—Accessories Sales Company.
Butte—Montana Hardware Company.

NEBRASKA

Lincoln—The Korsmeyer Company.

NEW JERSEY

Newark—Elin Auto Supply Co.
Automotive Equipment Co.
Economy Auto Supply Co.
Superior Lamp Mfg. Co.
Standard Auto Supply Co.
Thompson Reilly Co.
Grant Auto Supply Co.
Paterson—Geo. A. Myers & Co.
Trenton—Fineburgs Auto Tire & Accessory Co.

NEW YORK

Albany—Albany Hardware & Iron Co.
Brooklyn—Farrell Auto Supply Co
Flatbush Auto Supply Co.
The Ready Auto Supply Co.
New York—Auto Hardware & Equipment Co., Inc.
Lowe Motor Supply Co.
Beckley Ralston Co.
James Martin.
Weaver Ebling Auto Co.
Pyramid Motor Equip Co.
Richards Auto Supply Co.
A. J. Picard & Co.
J. B. Coben & Co.
Lehr Auto Supply Co.
Ryan & Hughes, Inc.
Chas. E. Miller.
Stuart Bell Company.
Rochester—Rochester Auto Supply Co.
Saranac Lake—Geo. L. Starks & Co.
Schenectady—Jay A. Rickard & Co.
Utica—Perry & Sherman.
Ralph L. Krohn.

Jobbers

NORTH CAROLINA

Charlotte — Carolinas Auto Supply House.
Greensboro—Greensboro Auto Supply Company.
Wilmington—Automobile Supply Co

OHIO

Canton—The Dine Dewees Co.
Columbus—The H. G. Root Company.
Griswald Sohl Co.
Dayton—G. W. Shroyer Co.

OREGON

Portland—Ballou & Wright Co.

OKLAHOMA

Oklahoma City—Sharp Auto Supply Company.

PENNSYLVANIA

Harrisburg—Alexander & Scott Co.
Philadelphia—Strauss & Cornfield.
Gaul, Deer & Schearer Co.
Cahall Motor Supply Co.
Standard Supply & Equipment Co.
Pittsburgh—Consumers Auto Supply Company.
Scranton—American Auto Supply Co.

RHODE ISLAND

Providence—Belcher & Loomis Hardware Co.
Waite Auto Supply Co.
Goodby Rankin Co.
Providence Auto Equipment Co.

SOUTH CAROLINA

Charleston—The Bailey Lebby Company.
Columbia—Carolina Tire & Auto Company.

TEXAS

Armarillo—Andrews-McDonald Co.
Dallas—Ferris-Dunlap Auto Supply Company.
Houston—Statler Auto Supply Company.

VIRGINIA

Norfolk—Norfolk Motor Equipment Co., Inc.
Petersburgh — Norton-Crutchfield & Company, Inc.
Richmond—C. L. Taylor & Co., Inc.

WASHINGTON

Seattle—Chanslor & Lyon Co.
Seattle Hardware Co.
Whiton Hardware Co.
Tacoma—Reynolds & Reynolds.

WEST VIRGINIA

Wheeling—T. T. Hutchisson Co.

WISCONSIN

Milwaukee—Reichardt Automotive Supply Co.
Western Motor Supply Co.
Racine—Electrical Construction Co.

CANADA

Fredericton—James S. Neill & Sons, Ltd.
Ottawa—Keys Supply Co.
Regina—Bowman Brothers.
Vancouver—Alcock, Downing & Wright, Ltd.
Wood, Valance & Leggatt.
McLennon, McFeeley & Co., Ltd.

SEDGWICK SALES COMPANY

1405 Sedgwick Avenue, New York City

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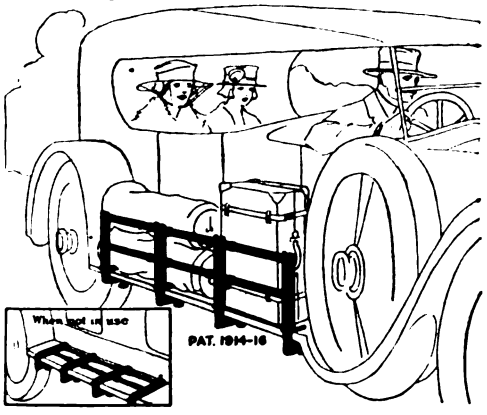
Marquette Luggage Carrier

Marquette Luggage Carrier

LENGTH ADJUSTABLE



It is without question one of the most popular and most useful accessories on the market today. A Luggage Carrier must have all of the following three points embodied in it to give maximum service to the user.

First—Capacity
Second—Safety
Third—Convenience

The Marquette Luggage Carrier gives all three of these and more.

We co-operate with both the dealer and jobber thru not only our advertising, but also thru dealer and jobber helps of various nature. Fits all cars. Folds down neatly to the running board when not in use, being scarcely noticeable. Attached quickly without the use of tools and without mutilation of running board. Once installed always ready.

Provides liberal storage for all kinds of luggage, camping equipment, parcels, etc., where they will not crowd the seating capacity of your car. Keeps them safe from loss or damage.

The strap feature of the Marquette Luggage Carrier holds the luggage absolutely stationary. The luggage is strapped to the Carrier and securely held in place away from the body of the car. The straps are adjustable and can be easily detached.

Made of high grade steel, neat in design. Nothing to break or get out of order. Finished in black enamel, furnished as follows:

4 ft. size adjustable from 27 in. to 48 in.....weight 5¾ lbs.....Price $4.50
5 ft. size adjustable from 36 in. to 60 in.....weight 7¾ lbs.....Price 5.00
5 ft. size furnished with three straps.....weight 8½ lbs.....Price 6.00

Expanding and Contracting Split Rims

The Little Giant Rim Tool performs every function of this task with ease, speed and dependability. It is handy, efficient and rapid in its application and operation.

The rim is placed in a suitable position in the grips of the Little Giant. A few turns of the handle contracts the rim and the tire is easily lifted off. A reverse motion of the handle will expand the rim, locking it securely in place.

It is designed to handle the most difficult tasks in expanding and contracting the different split rims used today. Repair and garage men are quick to appreciate the value and economy of this device. The investment involved will be saved a good many times figuring the cost of time, labor and damaged rims.

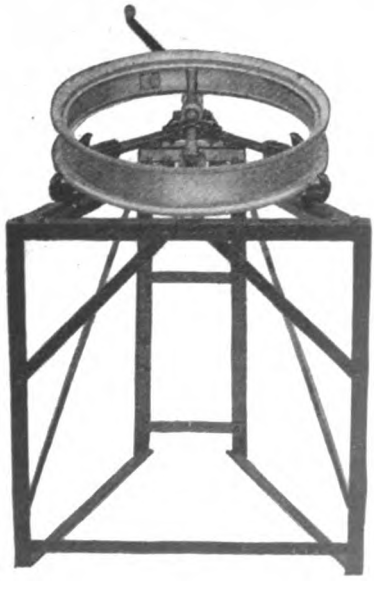
The stand is built of strong steel angles with proper reinforcements. A one inch square acme thread spindle is used, which positively will do the work required of it. The gripping parts are made of high grade malleable iron. Nothing but heavy, durable material is used throughout.

The tracks or slides in which the arms travel prevent the tool from buckling or the arms from sliding. The distance between gripping points are equal at all times. This prevents damaged or sprung rims. The mechanism of the tool is very simple. Nothing to break or get out of order. The tool is guaranteed against defect in material or workmanship.

The Little Giant will handle all styles and sizes of split rims made.

The machine comes knocked down into a comparatively small box, convenient for reshipping, simple to set up, you cannot put it together but one way and that is the correct way. It can be fastened to the floor, but this is not necessary.

We guarantee the Little Giant Rim Tool to give satisfaction.



LIST PRICE $30.00

Marquette Products Sold by All Live Jobbers

MARQUETTE MFG. CO.

ST. PAUL (Sole Manufacturers) **MINN.**

Eastern Branch Office:
Marquette Mfg. Co., 51 East 42d Street, New York City

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HOLDERS, Tire for Fords (Continued)

Autoguard—See Stewart-Warner Speedometer Corp.

Badger Mfg. Corp., Milwaukee, Wis. (See page 173.)

B. & A. Machine Co., 203 W. 75th St., New York, N. Y. "Spook." (See page 1099.)

Biltwell Accessories Co., 401 E. 23rd St., New York, N. Y.

Buckeye—See Central Brass & Fixture Co.

Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."

Crescent Mfg. Co., 129 Reade St., New York, N. Y. (See page 1207.)

Dayton Wire Wheel Co., 825 Miami Chapel Rd., Dayton, O.

Detroit Wire Wheel Corp., 7175 Clayton Ave., Detroit, Mich.

Duplex—See International Stamping Co.

Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.

Emco Mfg. Co., 4 Griswold St., Binghamton, N. Y. "Taber." (See page 497.)

Ferris Auto-Carrier Co., 29 S. Seventh St., Philadelphia, Pa. "Quick-Action."

Fox Automotive Products Corp., A. H., 4700 N. 18th St., Philadelphia, Pa. "Liberty."

Fulton Co., 75th & National Aves., Milwaukee, Wis. (Sole Distributors for American Metal Parts Mfg. Co., Milwaukee, Wis.) (See page 1034.)

Gahm-McCormick Co., 906 E. Main St., Streator, Ill. (See page 1139.)

Gem City—See Meeker Mfg. Co.

Globe Machine & Stamping Co., 1200-50 W. 76th St., Cleveland, O. "Lockfast." (See page 1049.)

Halladay Co., L. P., 501 N. Monroe St., Streator, Ill.

Hasco—See Howard Auto Specialties Co.

Hastings Mfg. Co., 36 Mill St., Hastings, Mich. (See page 567.)

Hoover Spring Co., 201-29 Franklin St., San Francisco, Cal.

Howard Auto Specialties Co., Swampscott, Mass. "Hasco."

Humboldt—See Republic Auto Parts Co.

International Metal Mfg. Co., Wayne Ave. & Berkley St., Philadelphia, Pa. "Yankee."

International Stamping Co., 400 N. Leavitt St., Chicago, Ill. "Duplex," "Simplex." (See page 1103.)

Kap Mfg. Co., 281 Natoma St., San Francisco, Cal.

Korect—See New Era Spring & Specialty Co.

Liberty—See Fox Gun Co.

Lockfast—See Globe Machine & Stamping Co.

Lyon—See Metal Stamping Co.

McKinnon Dash Co., Buffalo, N. Y. (See page 831.)

Maryland Metal Products Co., Hagerstown, Md.

Meeker Mfg. Co., Linden & Huffman Aves., Dayton Co. "Gem City."

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y. "Lyon."

Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich. "Ospeco."

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)

New Era Spring & Specialty Co., 51-56 Cottage Grove St. S. W., Grand Rapids, Mich. "Sly," "Korect," "Perfection."

Oro—See Au-To Compressor Co.

Ospeco—See Michigan Auto Products Co.

Packer Auto Specialty Co., 1420 S. Michigan Ave., Chicago, Ill.

Perfection—See New Era Spring & Specialty Co.

Quick-Action—See Ferris Auto-Carrier Co.

Ray—See Packer Auto Specialty Co.

Republic Auto Parts Co., 31-35 Tenth St., Long Island City, N. Y. "Humboldt." "Sterling."

Richards-Wilcox Mfg. Co., Third St. & C. B. & Q. R. R. Tracks, Aurora, Ill.

Simplex—See International Stamping Co.

Sly—See New Era Spring & Specialty Co.

Sly Mfg. Co., W. W., Cleveland, O.

Spook—See B. & A. Machine Co.

Standard Motor Parts Co., 1420 S. Michigan Ave., Chicago, Ill. (Sole distributors for Packer Auto Specialty Co., Chicago, Ill.) "Ray."

Sterling—See Republic Auto Parts Co.

Stewart-Warner Speedometer Corp., Chicago, Ill. "Autoguard." (See page 177.)

Taber—See Emco Mfg. Co.

Trex—See Trexler Co.

Trexler Co., 1418 Walnut St., Philadelphia, Pa. (Sole Distributors for Twinlock Co., Philadelphia, Pa. "Trex.") (See page 925.)

Twinlock Co.—See Trexler Co.

Universal—See Auto Forge Sales Co.

Vantage—See Victor Steel Stamping Co.

Victor Steel Stamping Co., 3102 Downing St., Denver, Colo. "Vantage."

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

Whitehouse Mfg. Co., 42 Elm St., Newark, N. J. (See page 637.)

Yankee—See International Metal Mfg. Co.

HOLDERS, TOOL—See Holders, Lathe and Planer Tool

HOLDERS, Top

(For holding or clamping tops securely when in folded or down position; See also Straps, Leather)

Adams—See Rock Island Mfg. Co.

Auto Specialties Mfg. Co., St. Joseph, Mich. "Blair." (See page 421.)

Blair—See Auto Specialties Mfg. Co.

Rock Island Mfg. Co., Rock Island, Ill. "Adams." (See page 1061.)

Sharrer Patent Top Co., 250 W. 54th St., New York, N. Y. (See page 1001.)

Sterling Top & Equipment Co., 518-22 W. 57th St., New York, N. Y.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

HOLDERS, TOP FOR FORDS—See Clamps, Top Bow

HOLDERS or STOCKS, Transmission Drum for Fords

(Holder with handles to clamp on drum so that it may be easily turned when reaming bearing bushing with stationary reamer. For Bench Clamps or Vises for Transmission Drums—See Clamps or Vises, Transmission Drum for Fords)

Railway Specialty Co., Atchison, Kans. "Rysco."

Rysco—See Railway Specialty Co.

HOLDERS, Watch

(See also Clocks, Dashboard)

Ajax—See Newark Watch Case Material Co.

Bryan's Department Store, Staunton, Va. "Time Clutch."

Burleigh, Geo. K., Penacook, N. H.

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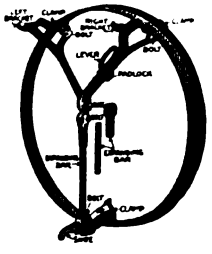
CLIMAX

TIRE CARRIERS

FOR TWO SPARE TIRES



Can be attacned in five minutes to cars using felloe band single carriers. By simply clamping to the felloe band it makes it possible to carry either one or two tires without the necessity of removing nuts or unfastening straps. It also embodies a locking device with which a padlock can be used preventing the removal of either tire while locked.

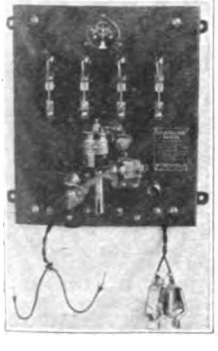
Price, $12.00

Manufactured by

STRIFLER & SHANNON

1810-1812 West Pico Street, LOS ANGELES

Size 12x14 Inches



Charges any storage battery up to 18 cells from 110 volt direct current circuits

The "HOLT"

Battery Charging Panel

Especially Made for Isolated Lighting Plants

The only small charging panel providing protection against discharging the batteries in case of failure of the source of power.

The Charging Rate is Variable from 2 to 7 Amperes

The equipment consists of ammeter, charging switches, connecting leads and circuit breaker.

List Price $50.00

Liberal discounts to dealers.

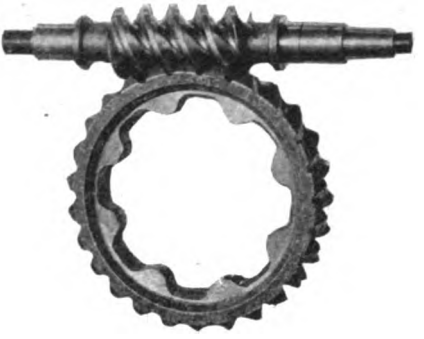
AUTOMATIC LIGHT CO., INC.

LUDINGTON, MICH.

Manufacturers of

The "Holt" Power-Light Plant

110 Volt Non Battery 750 Watts



Baush Worm Gears

YEARS of experience, conscientious work, unequalled manufacturing facilities and a most rigid inspection have caused the name BAUSH when applied to worm gears to stand for ACCURACY, DEPENDABILITY—THE BEST.

Our customers tell us the fact that their axles are equipped with BAUSH worm gears furnishes a most valuable talking point. EVERY BAUSH WORM GEAR IS A MASTERPIECE.

Our Engineering Department is ready to advise you and help you solve your worm gear problems. Let us quote you.

BAUSH MACHINE TOOL CO,

Springfield Massachusetts

Detroit Office:
1825 Dime Savings Bank Bldg.

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HOLDERS, Watch (Continued)

Cowles & Co., C., New Haven, Conn. (See page 651.)

Economic—See Jay & Dee Specialty Co.

Jay & Dee Specialty Co., 41 Park Row, New York, N. Y. "Economic."

Meiser & Co., G. H., 6823 S. Chicago Ave., Chicago, Ill. "Quick Action."

Newark Watch Case Material Co., 15-19 Ward St., Newark, N. J. "Ajax."

Newton Mfg. Co., Church St., Plainville, Conn.

Nojar—See Pennsylvania Rubber Co.

O'Brien Mfg. Co., Joseph F., 891 Broadway, New York, N. Y.

Pennsylvania Rubber Co., Jeannette, Pa. "Nojar."

Quick Action—See Meiser & Co.

Time Clutch—See Bryan's Department Store.

HOLDERS, Watch, for Fords

(See also Clocks, Steering Wheel)

Neverout—See Rose Mfg. Co.

Rose Mfg. Co., 910 Arch St., Philadelphia, Pa. "Never-out." (See page 711.)

HOLDERS OR CARRIERS, Spare Wheel

Hublock—See Simplex Metal Products Co.

Simplex Metal Products Co., 2359 Prairie Ave., Chicago, Ill. "Hublock." (See page 515.)

HOLDERS or CARRIERS, Spare Wheel, for Fords

Better—See New Era Spring & Specialty Co.

Biltwell Accessories Co., 401 E. 23rd St., New York, N. Y.

Hublock—See Simplex Metal Products Co.

New Era Spring & Specialty Co., 51-55 Cottage Grove St. S. W., Grand Rapids, Mich. "Better."

Simplex Metal Products Co., 2359 Prairie Ave., Chicago, Ill. "Hublock." (See page 515.)

Simplex Wire Wheel Co., Cadillac, Mich. (See page 1065.)

HOLDING STANDS, GENERATOR — See Stands, Generator Holding

HOOD CLAMPS FOR FORDS — See Clamps, Hood

HOOD COVERS—See Covers, Radiator

HOOD FASTENERS—See Fasteners, Hood; also Fasteners, Ventilating Hood

HOOD FASTENERS FOR FORDS — See Clamps, Hood

HOOD FORMING MACHINES—See Machines, Hood Hinge Forming

HOOD HINGES—See Hinges, Hood

HOOD LACING—See Lacing, Fabric Radiator; also Leather, Rawhide Lace

HOOD LATCHES—See Fasteners, Hood

HOOD SUPPORTS—See Supports, Hood

HOOD VENTILATOR FORMING MACHINES—See Machines, Louvre Forming

HOODS, Engine

A. B. & B. Sheet Metal Works, 3300-02 Fond du Lac Ave., Milwaukee, Wis.

Auto Radiator Mfg. Co., 1712 S. Michigan Ave., Chicago, Ill.

Automotive Sheet Metal Co., Factory St. and Grand Trunk R. R., Kalamazoo, Mich. "Maco."

Briskin Mfg. Co., 215 S. Hoyne Ave., Chicago, Ill.

Brummeler-Ruggles Metal Products Co., 1215 Ionia Ave., S. W., Grand Rapids, Mich.

Brummeler's Sons Co., Wm., 413 Ionia Ave., S. W., Grand Rapids, Mich. "Brusco."

Brusco—See Brummeler's Sons Co., Wm.

Bush Mfg. Co., Hartford, Conn. (See page 797.)

Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representative.) (See page 345.)

Chicago Mfg. Co., 1453-64 Michigan Ave., Chicago, Ill.

Clayton & Lambert Mfg. Co., Detroit, Mich. (See page 981.)

Columbus Auto Brass Co., Columbus, O. (See page 1139.)

Cornwall Mfg. Co., Cleveland, O. (See page 951.)

Detroit Auto Specialty Corp., 6209 Greenwood Ave., Detroit, Mich.

Field Body Corp., Owosso, Mich. (See page 141.)

Fostoria Pressed Steel Co., Fostoria, O. (See page 993.)

Gender, Paescke & Frey Co., 1365-1700 St. Paul Ave., Milwaukee, Wis. (See page 949.)

Hayes Mfg. Co., 4525 Maybury Grand Ave., Detroit, Mich.

Hersh & Bro., 645 Mill St., Allentown, Pa.

Jackson Metal Products Co., 601-15 Liberty St., Jackson, Mich.

Johnson's Automobile Sheet Metal Works, W. N., 620-28 South J St., Richmond, Ind.

Kells Mfg. Co., W. J., 521-25 W. 45th St., New York, N. Y.

Kleber-Sherman Mfg. Co., 2807 S. Michigan Ave., Chicago, Ill.

Kirk & Blum, 2346 Spring Grove Ave., Cincinnati, O.

Lawco—See Lawson Co.

Lawson Co., F. H., Dept. D., Cincinnati, O. "Lawco." (See page 327.)

Lima Sheet Metal Products Co., 303 E. Wayne St., Lima, O.

Maco—See Automotive Sheet Metal Co.

Metal Auto Parts Co., Chase & Henry Sts., Indianapolis, Ind.

Michigan Stamping Co., 11631 Mack Ave., Detroit, Mich.

Moline Pressed Steel Co., Fifth St., East Moline, Ill.

Morrison Steel Products Co., 26-28 E. North St., Buffalo, N. Y.

Motors Metal Mfg. Co., 5936 Milford Ave., Detroit, Mich.

Murray Auto Parts Mfg. Co., Atlanta, Ga.

Murray Mfg. Co., J. W., 571 Clay Ave., Detroit, Mich.

Paragon Auto-Parts Mfg. Co., 506 W. 53d St., New York, N. Y.

Perfex Radiator Co., Racine, Wis.

Progressive Sheet Metal Co., 1976-84 Central Ave., Cincinnati, O.

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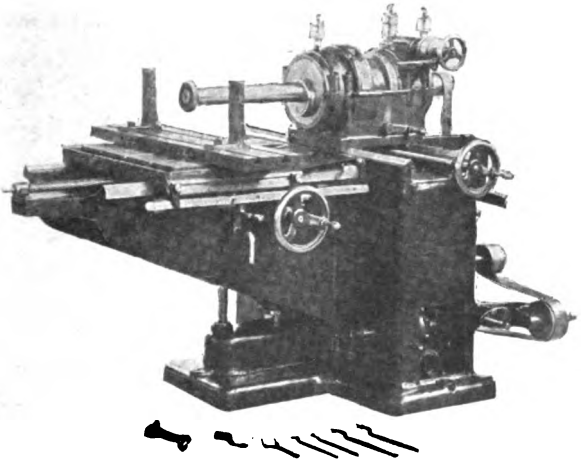

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Regulator Handle Escutcheon Plates

Footman Loops
Curtain Posts
Robe Rail Fixtures
Outside Door Handles
Toilet Cases

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HOODS, Engine (Continued)

Pandolfo Mfg. Co., St. Cloud, Minn. (See page 157.)

S.-J.—See Shotwell-Johnson.

Saginaw Sheet Metal Works, 2060 Genesee Ave., Saginaw, Mich.

Sargeant Mfg. Co., New & Summit Sts., Newark, N. J.

Shotwell - Johnson, Minneapolis, Minn. "S-J." (See page 1115.)

Todd Mfg. Co., 12-14 N. 12th St., Minneapolis, Minn.

Universal Metal Parts Mfg. Co., 602-04 W. 52d St., New York, N. Y.

Western Metal Specialty Co., 1919 St. Paul Ave., Milwaukee, Wis.

Wright Cooler & Hood Mfg. Co., 4868-70 N. Clark St., Chicago, Ill.

York Corrugating Co., York, Pa.

HOODS, Engine, for Fords

(Including both standard and stream line hoods)

A. B. & B. Sheet Metal Works, 2300-02 Fond du Lac Ave., Milwaukee, Wis.

Candler Radiator Co., 1084-86 Jefferson Ave., E., Detroit, Mich. (See page 841.)

Empire Auto Specialty Co., 1420-24 Blue Island Ave., Chicago, Ill.

Field Body Corp., Owosso, Mich. (See page 141.)

Kleber-Sherman Mfg. Co., 2807 S. Michigan Ave., Chicago, Ill.

Lawco—See Michigan Auto Products Co.

Lawson Co., F. H., Dept. D., Cincinnati, O. (See page 327.)

Livingston Radiator Corp., Plainfield, N. J. "Rolsford."

Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich. "Lawco."

Motors Metal Mfg. Co., 5936 Milford Ave., Detroit, Mich.

Pandolfo Mfg. Co., St. Cloud, Minn. (See page 157.)

Rolsford—See Livingston Radiator Corp.

Superior Lamp Mfg. Co., 148-50 W. 52d St., New York, N. Y.

HOODS, MOTOR—See Hoods, Engine

HOODS, Radiator, for Fords

(Pressed or stamped hoods or covers to apply over radiator to give a V or stream line appearance)

Columbia Auto Radiator Co., 902-06 Race St., Cincinnati, O.

Corcoran Mfg. Co., Section & Foraker Aves. (Norwood), Cincinnati, O. "Peerless."

Dunham Co., Thos., Aurora, Ill. (See page 167.)

Empire Auto Specialty Co., 1420-24 Blue Island Ave., Chicago, Ill.

Field Body Corp., Owosso, Mich. (See page 141.)

Lawco—See Michigan Auto Products Co.

Lawco—See Lawson Co.

Lawson Co., F. H., Dept. D, Cincinnati, O. "Lawco." (See page 327.)

Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich. "Lawco."

Peerless—See Corcoran Mfg. Co.

HOODS, Tractor

Champion Milk Cooler Co., 52-60 Owego St., Cortland, N. Y.

Chicago Mfg. Co., 1453-64 Michigan Ave., Chicago, Ill.

Derby Coppersmithing & Sheet Metal Contracting Co., First & Caroline Sts., Derby, Conn.

Field Body Corp., Owosso, Mich. (See page 141.)

Hersh & Bro., 645 Mill St., Allentown, Pa.

Kells Mfg. Co., W. J., 521-25 W. 45th St., New York, N. Y.

Moore Mfg. Co., Concrete & Water Sts., Waterloo, Ia.

York Corrugating Co., York, Pa.

HOOKS, MUD—See Chains or Grips, Non-Skid

HOOKS, Safety Tow

Ideal—See Reinhold Co.

Reinold Co., John J., Marietta, Pa. "Ideal."

HOOKS, Snap

Anchor—See North & Judd Mfg. Co.

Covert Mfg. Co., Troy, N. Y.

Metal Stamping Co., 12th St. & East Ave., Long Island City, N. Y.

North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn. "Anchor."

Sargent & Co., Walter & Wallace Sts., New Haven, Conn.

Wilcox, Crittenden & Co., 2 S. Main St., Middletown, Conn.

HOOKS, TIRE CHAIN—See Fasteners, Tire Chain

HOOKS, TOW—See Hooks, Safety Tow

HORIZONTAL BORING MACHINES—See Machines, Horizontal Boring

HORN BULBS—See Bulbs, Rubber Horn

HORN BUTTONS—See Buttons, Push

HORN BUTTONS FOR FORDS—See Buttons, Special Horn

HORN PEDALS—See Pedals, Horn

HORN REEDS—See Reeds, Horn

HORN SCREENS—See Screens, Horn

HORN SWITCHES—See Switches, Horn

HORN TUBES—See Tubing, Flexible

HORN VALVES—See Valves, Muffler Cut-out

HORNS, Bulb

Arkay—See Riley-Klotz Mfg. Co.

Riley-Klotz Mfg. Co., 17 Mulberry St., Newark, N. J. "Arkay."

Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) (See page 301.)

Standard Metal Mfg. Co., 237 Chestnut St., Newark, N. J.

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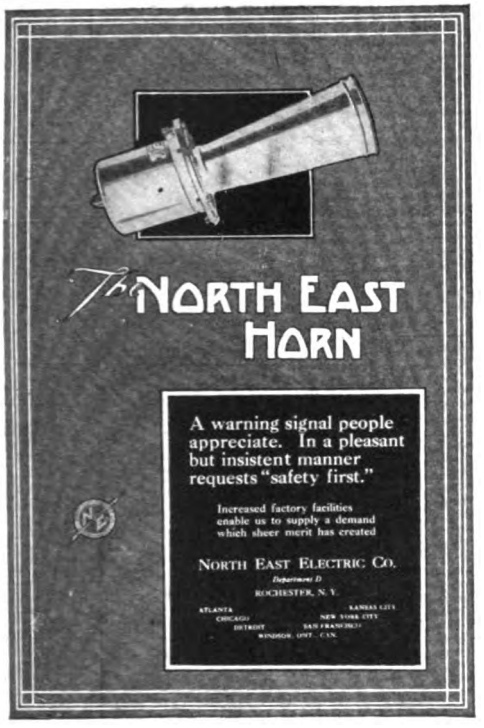

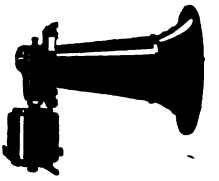

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HORNS, Electric

(Motor driven and vibrator type horns)

Adams-Bagnall Electric Co., 7209 Platt St., Cleveland, O.

American Electric Co., 6401 S. State St., Chicago, Ill. "Samson."

Auto Metal Products Co., 432 E. 71st St., New York, N. Y. "Paramount." "Ryt-O-Way." (See page 1093.)

Benjamin Electric Mfg. Co., 806 W. Washington Blvd., Chicago, Ill. (See pages 181 and 517.)

C. A. S. Engineering Co., 4210 Woodward Ave., Detroit, Mich. (Sole Distributors for United Electrical Mfg. Co., Adrian, Mich. "Trojan.")

Cassidy Co., Inc., Edward A., 23 W. 43rd St., New York, N. Y. (Sales Department for G. Piel Co., Long Island City, N. Y.) (See page 87.)

Clero—See Fitzgerald Mfg. Co.

E. A. Laboratories, Inc., Brooklyn, N. Y. "Newtone," "Handphone." (See page 521.)

Economy—See Premier Electric Co.

Fitzgerald Mfg. Co., Torrington, Conn. "Clero." (See page 451.)

General Phono Mfg. Co., Elyria, O. (See page 189.)

Gray-Heath Co., 1440 S. Michigan Ave., Chicago, Ill. (See page 741.)

Handphone—See E. A. Laboratories.

Heco—See Heinze Electric Co.

Heinze Electric Co., Lawrence St., Lowell, Mass. "Heco."

Holtzer-Cabot Electric Co., 125 Armory St., Boston, Mass. "Reacto."

Inter-State Machine Products Co., 56 Allen St., Rochester, N. Y. "Sterling."

Klaxon Co., Newark, N. J. (See page 517.)

Minerva Mfg. Co., Minerva, O.

Newtone—See E. A. Laboratories.

North East Electric Co., Dept. D, Rochester, N. Y. (See page 517.)

O'Brien Electrophone Co., Hallowell, Me.

Paramount—See Auto Metal Products Co.

Piel Co.—See Cassidy Co.

Premier Electric Co., 3800-10 Ravenswood Ave., Chicago, Ill. "Economy."

Reacto—See Holtzer-Cabot Electric Co.

Ryt-O-Way—See Auto Metal Products Co.

Samson—See American Electric Co.

Schwarze Electric Co., Adrian, Mich. (See page 521.)

Sparks-Withington Co., Jackson, Mich. "Sparton."

Sparton—See Sparks-Withington Co.

Sterling—See Inter-State Machine Products Co.

Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 177.)

Trojan—See C. A. S. Engineering Co.

Turner Electric Supply Co., 18-20 S. 20th St., Birmingham, Ala.

United Electrical Mfg. Co.—See C. A. S. Engineering Co.

Warner Electric Co., 2507 S. Walnut St., Muncie, Ind.

HORNS, Electric, for Fords

(Motor driven and vibrator type horns)

Auto Metal Products Co., 432 E. 71st St., New York, N. Y. "Paramount", "Ryt-O-Way". (See page 1093.)

Benjamin Electric Mfg. Co., 806 W. Washington Blvd., Chicago, Ill. (See pages 181 and 517.)

Cassidy Co., Inc., Edward A., 23 W. 43d St., New York, N. Y. (Sales Department for G. Piel Co., Long Island City, N. Y.) (See page 87.)

Clero—See Fitzgerald Mfg. Co.

E. A. Laboratories, Inc., Brooklyn, N. Y. "Newtone," "Handphone." (See page 521.)

Fitzgerald Mfg. Co., Torrington, Conn. "Clero." (See page 451.)

General Phono Mfg. Co., Elyria, O. (See page 189.)

Handphone—See E. A. Laboratories.

Heco—See Heinze Electric Co.

Heinze Electric Co., Lawrence St., Lowell, Mass. "Heco."

Klaxon Co., Newark, N. J. (See page 517.)

Newtone—See E. A. Laboratories.

Piel Co.—See Cassidy Co.

Sparks-Withington Co., Jackson, Mich.

Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 177.)

HORNS, Engine Operated, for Fords

Marvel Accessories Mfg. Co., 1220 W. Sixth St., Cleveland, O.

HORNS, Exhaust

(Tube Horns or Chimes and Whistles)

Aermore—See Fulton Co.

Amco—See Chicago Electric Mfg. Co.

American—See Clark, Alfred H.

Arkay—See Riley-Klotz Mfg. Co.

Autobird—See Richfield Mfg. Co.

Autochime—See Gray-Hawley Mfg. Co.

B & B Mfg. Co., 2825 Arsenal St., St. Louis, Mo. (See page 519.)

Bailey Co., W. J., Newark, N. J.

Barco Mfg. Co., 212-22 W. Illinois St., Chicago, Ill.

Brookins Mfg. Co., Dayton, O.

Big Four Horn Co., Watseka, Ill.

Buell Mfg. Co., Cottage Grove at 30th, Chicago, Ill. (See page 519.)

Chicago Electric Mfg. Co., 523-29 Van Buren St., Chicago, Ill. "Amco."

Clark, Alfred H., 1307 Howard Ave., Bridgeport, Conn. "American."

Duplex Machine Co., 93 Lafayette St., Newark, N J. "Melotone."

Eco Signal Mfg. Co., 501 S. Dearborn St., Chicago, Ill.

Fulton Co., 75th & National Aves., Milwaukee, Wis. "Aermore." (See pages 1031 to 1036.)

Gabriel Mfg. Co., 1421 E. 40th St., Cleveland, O.

Gray-Hawley Mfg. Co., 3123-31 Jefferson Ave., E., Detroit, Mich. "Autochime."

Husk—See Western Brass Mfg. Works.

Illinois Brass Mfg. Co., 224-30 W. Ontario St., Chicago, Ill. "Nopowerloss."

Inter-State Tool & Mfg. Co., 3400 Rutger St., St. Louis, Mo. "T-N-T."

Jericho—See Randall-Faichney Co.

Jubilee—See Randall-Faichney Co.

Liberty—See Stiles-Gilliland Mfg. Co.

Melotone—See Duplex Machine Co.

Mormiles Co., 416 Sherman St., Chicago, Ill.

Nopowerloss—See Illinois Brass Mfg. Co.

Racine Accessories Mfg. Co., 14th & Clark Sts., Racine, Wis. (See page 481.)

Randall-Faichney Co., 76 Atherton St. (Jamaica Plain), Boston, Mass. "Jericho," "Jubilee."

Richfield Mfg. Co., 1912 Pine St., St. Louis, Mo. "Autobird."

Riley-Klotz Mfg. Co., 17 Mulberry St., Newark, N. J. "Arkay."

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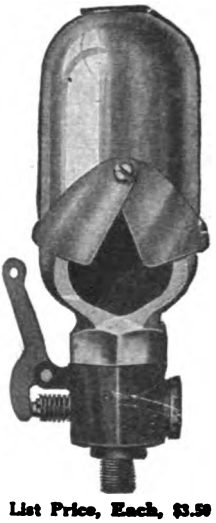

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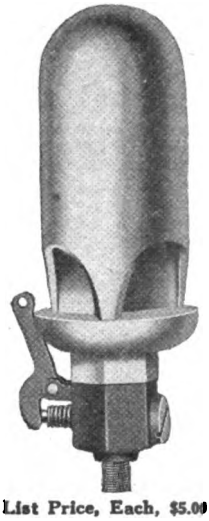

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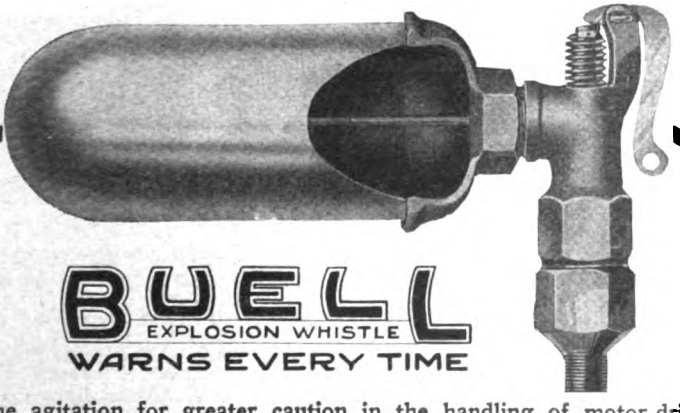

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HORNS, Exhaust (Continued)

Safety—See Sampson Mfg. Co.

Sampson Mfg. Co., 1607-11 Prairie Ave., Chicago, Ill. "Safety." (See page 521.)

Serum & Co., Chas. H., 3301 W. Chicago Ave., Chicago, Ill.

Shultis Automotive Corp., 16-22 W. 61st St., New York, N. Y. (New England, New York and New Jersey Distributors for "Safety" Horns.) (See page 609.)

Stiles Mfg. Co., St. Louis, Mo. "Liberty." (See page 521.)

T N T—See Inter-State Tool & Mfg. Co.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. "Husk." (See page 1097.)

HORNS, Exhaust, for Fords

(Tube Horns or Chimes and Whistles)

Aermore—See Fulton Co.

Auto Tire Sales Co., 1346-48 Michigan Ave., Chicago, Ill. (See page 143.)

Barco Mfg. Co., 212-22 W. Illinois St., Chicago, Ill.

Buell Mfg. Co., Cottage Grove at 30th, Chicago, Ill. (See page 519.)

Fulton Co., 75th & National Aves., Milwaukee, Wis. "Aermore." (See pages 1031 to 1036.)

Jericho—See Randall-Faichney Co.

Jubilee—See Randall-Faichney Co.

Klaxon Co., Newark N. J. (See page 517.)

McClintock, Edward, 221 S. Fifth St., Minneapolis, Minn.

Minerva Mfg. Co., Minerva, O.

Randall-Faichney Co., 76 Atherton St. (Jamaica Plain), Boston, Mass. "Jericho." "Jubilee."

Stiles Mfg. Co., St. Louis, Mo. (See page 521.)

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

HORNS, FAN, FOR FORDS—See Horns, Engine Operated

HORNS, HAND—See Horns, Bulb; also Horns, Mechanical

HORNS, Mechanical

(Hand operated diaphragm horns; for Reed Horns—See Horns, Bulb)

A-K—See Angsten-Kox Co.

American Electric Co., 6401 S. State St., Chicago, Ill. "Samson-Tiger," "Samson-Lion."

Angsten-Kox Co., 221-23 W. Randolph St., Chicago, Ill. "A-K."

Auto Metal Products Co., 432 E. 71st St., New York, N. Y. "Paramount," "Ryt-O-Way." (See page 1093.)

Cassidy Co., Inc., Edward A., 23 W. 43d St., New York, N. Y. (Sales Department for G. Piel Co., Long Island City, N. Y.) (See page 87.)

Clero—See Fitzgerald Mfg. Co.

E. A. Laboratories, Inc., Brooklyn, N. Y. "Newtone," "Handphone." (See page 521.)

Fitzgerald Mfg. Co., Railroad Ave., Torrington, Conn. "Clero." (See page 451.)

General Phono Mfg. Co., Elyria, O. (See page 189.)

Gray-Heath Co., 1440 S. Michigan Ave., Chicago, Ill. (See page 741.)

Handphone—See E. A. Laboratories.

Heco—See Heinze Electric Co.

Heinze Electric Co., Lawrence St., Lowell, Mass. "Heco."

Klaxon Co., Newark, N. J. (See page 517.)

Leader—See Talking Horn Co.

M-L—See Miller-Lovatt Co.

Miller-Lovatt Co., Weatherly, Pa. "M-L."

Newtone—See E. A. Laboratories.

O. B.—See Talking Horn Co.

Paramount—See Auto Metal Products Co.

Piel Co.—See Cassidy Co.

Ryt-O-Way—See Auto Metal Products Co.

Samson-Lion—See American Electric Co.

Samson-Tiger—See American Electric Co.

Seiss Mfg. Co., Phillips Ave. & N. Y. C. Ry., Toledo, O.

Sparks-Withington Co., Jackson, Mich. "Sparton-Echo."

Sparto-Echo—See Sparks-Withington Co.

Standard Auto Horn Co., 207 Broadway, Everett, Mass.

Standard Metal Mfg. Co., 237 Chestnut St., Newark, N. J.

Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 177.)

Talking Horn Co., Central Bldg., Middletown, N. Y. "O. B.," "Torpedo," "Leader."

Torpedo—See Talking Horn Co.

HORNS, Mechanical, for Fords

(Hand operated diaphragm horns)

Auto Metal Products Co., 432 E. 71st St., New York, N. Y. "Paramount," "Ryt-O-way." (See page 1093.)

Cassidy Co., Inc., Edward A., 23 W. 43d St., New York, N. Y. (Sales Department for G. Piel Co., Long Island City, N. Y.) (See page 87.)

Clero—See Fitzgerald Mfg. Co.

Fitzgerald Mfg. Co., Torrington, Conn. "Clero." (See page 451.)

Klaxon Co., Newark, N. J. (See page 517.)

Leader—See Talking Horn Co.

O. B.—See Talking Horn Co.

Piel Co.—See Cassidy Co.

Ryt-O-Way—See Auto Metal Products Co.

Seiss Mfg. Co., Phillips Ave. & N. Y. C. Ry., Toledo, O.

Sparks-Withington Co., Jackson, Mich.

Standard Auto Horn Co., 207 Broadway, Everett, Mass.

Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 177.)

Talking Horn Co., Central Bldg., Middletown, N. Y. "O. B.," "Torpedo," "Leader."

Torpedo—See Talking Horn Co.

HORNS, Motorcycle Mechanical

A-K—See Angsten-Kox Co.

Angsten-Kox Co., 221-23 W. Randolph St., Chicago, Ill. "A-K."

Auto Metal Products Co., 432 E. 71st St., New York, N. Y. "Paramount," "Ryt-O-way." (See page 1093.)

Bevin Bros. Mfg. Co., East Hampton, Conn.

E. A. Laboratories, Inc., Brooklyn, N. Y. "Handphone." (See page 521.)

Handphone—See E. A. Laboratories, Inc.

Klaxon Co., Newark, N. J. (See page 517.)

Leader—See Talking Horn Co.

Paramount—See Auto Metal Products Co.

Ryt-O-Way—See Auto Metal Products Co.

Seiss Mfg. Co., Phillips Ave. & N. Y. C. Ry., Toledo, O.

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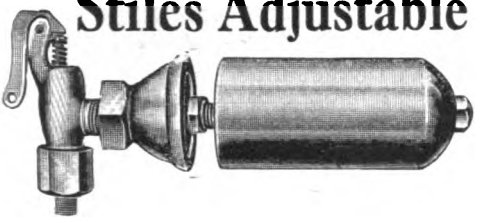
Stiles Adjustable Explosion Whistle



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Price $4.00 Complete

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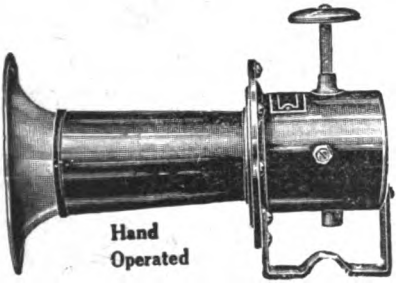
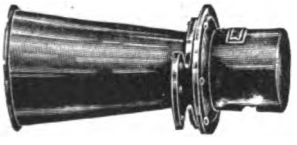
NEWTONE & HANDPHONE MOTOR & HAND HORNS



Hand Operated



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Under Hood Type
Write for particulars.

E. A. LABORATORIES, Inc.
BROOKLYN, NEW YORK, U. S. A.
Proprietors of
AUTOMOBILE SUPPLY MFG. CO.

For Safety Sake SAMPSON Warning Signal

In the emergency, here is the whistle that never fails—no adjusting, no wires to loosen, no short circuiting.

TROUBLE PROOF
The Sampson is solidly made of heavy metal stampings, handsomely nickeled. Simple, scientifically correct. The patent valve cleans itself of carbon. Nothing to break or get out of order.

EASILY APPLIED
Operates by cylinder compression—simply attached with a wrench in place of priming cup on any cylinder. Out of the way under the hood. Satisfaction assured by money back guarantee.

Dealers—Get your share of the profitable demand for the SAMPSON. Manufacturers—the SAMPSON means more goodwill for you. Write to-day for interesting proposition.

$2.50
Complete

Simple attachment for cars without priming cups, 50c additional.

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SAMPSON MFG. CO.,
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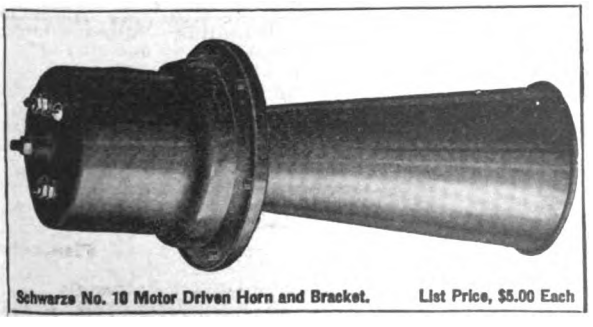

Schwarze No. 10 Motor Driven Horn and Bracket. List Price, $5.00 Each

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Vibrator and Motor Driven Types. Circuit Breakers. Push Buttons. Electric Bells for the Factory, Department Store, Boats, Mines, Street Cars, Pipe Lines. Telephone Extension Bells and Buzzers.

Schwarze Electric Co.
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HORNS, Motorcycle Mechanical (Continued)

Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 177.)

Standard Metal Mfg. Co., 237 Chestnut St., Newark, N. J.

Talking Horn Co., Central Bldg., Middletown, N. Y. "Leader," "Torpedo."

Torpedo—See Talking Horn Co.

HORNS, Motorcycle Siren

Sireno Co., 18-20 Rose St., New York, N. Y.

HORNS, Siren

(For Ambulances, Police and Fire Department Apparatus)

Inter-State Machine Products Co., 56 Allen St., Rochester, N. Y. "Sterling."

O'Brien Electrophone Co., Hallowell, Me.

Sireno Co., 18-20 Rose St., New York, N. Y.

Sterling—See Inter-State Machine Co.

HORSES, TRESTLES and TRUCKS

Autohorse—See Bailey-Drake Co.

Bailey-Drake Co., 1120 S. Michigan Ave., Chicago, Ill. (Sales Department for Safety Equipment Co., West Mentor, O.) "Autohorse."

Frasse & Co., Peter A., 417-21 Canal St., New York, N. Y. "Hildreth." (See page 279.)

Hildreth—See Frasse & Co.

Johnstown Automobile Co., Johnstown, Pa.

Safety Equipment Co.—See Bailey-Drake Co.

HOSE BOXES—See Boxes, Standard and Curb

HOSE CLAMPS—See Clamps, Hose

HOSE COUPLINGS—See Clamps, Hose

HOSE, FLEXIBLE METAL—See Tubing, Flexible Metallic; also Hose, Metal Lined

HOSE, GASOLINE—See Hose, Metal Lined

HOSE, Metal Lined

(For use with gasoline pumps)

American Metal Hose Co., Waterbury, Conn. (See page 291.)

Atlantic Metal Hose Co., 40 W. 60th St., New York, N. Y.

Boston Woven Hose & Rubber Co., Cambridge, Mass.

Breeze Mfg. Co., 255 South St., Newark, N. J.

Chicago Tubing & Braiding Co., 216-24 N. Clinton St., Chicago, Ill. "Rex."

Dewes Co., A., 199 Lafayette St., New York, N. Y. (See page 523.)

Metal Hose & Tubing Co., 230 Tillary St., Brooklyn, N. Y. "Triplexd." (See page 523.)

Mulconroy Co., 54th & Jefferson St., Philadelphia, Pa.

Penflex—See Pennsylvania Flexible Metallic Tubing Co.

Pennsylvania Flexible Metallic Tubing Co., Philadelphia, Pa. "Penflex."

Rex—See Chicago Tubing & Braiding Co.

Titeflex Metal Hose Corp., Badger Ave. & Runyon St., Newark, N. J. (See page 293.)

Triplexd—See Metal Hose and Tubing.

Whalen Co., John, 85 Purchase St., Boston, Mass.

HOSE, RADIATOR—See Hose, Rubber

HOSE, Radiator, for Fords

Asbestos & Rubber Works of America, 1821 Broadway, New York, N. Y. "Motobestos." (See page 645.)

Beaver—See Mechanical Rubber Co.

Cincinnati Rubber Mfg. Co., Cincinnati, O. (See page 523.)

Esner Mfg. Co., 206 Green St., Peoria, Ill. "Soo-Bes-Tos."

Federal Rubber Co. (Cudahy), Milwaukee, Wis.

Mechanical Rubber Co., 307 W. Randolph St., Chicago, Ill. "Beaver."

Motobestos—See Asbestos & Rubber Works of America.

Soo-Bes-Tos—See Esner Mfg. Co.

Thermoid Rubber Co., Trenton, N. J. (See page 543.)

Tyler Mfg. Co., 755 Boylston St., Boston, Mass. "Tymco."

Tymco—See Tyler Mfg. Co.

United Metal Hose Co., 532 W. 22d St., New York, N. Y.

United & Globe Rubber Co., Prospect & Frasier Sts., Trenton, N. J.

Voorhees Rubber Mfg. Co., 29-56 Bostwick Ave., Jersey City, N. J.

HOSE REELS, AUTOMATIC—See Reels, Automatic Hose

HOSE, Rubber

(Radiator hose, including molded radiator connections)

A-B-C—See American Brake-Lining Co.

Acme Rubber Mfg. Co., Trenton, N. J.

American Brake-Lining Co., Lansdale, Pa. "A-B-C." (See page 669.)

Anchor Packing Co., 72 Murray St., New York, N. Y. "Ankorite." (See page 669.)

Ankorite—See Anchor Packing Co.

Barcus—See Electric Hose & Rubber Co.

Boston Belting Co., 84 Linden Park St., Boston, Mass.

Boston Woven Hose & Rubber Co., Cambridge, Mass. "Sterling."

Bowers Rubber Works, 68-70 Sacramento St., San Francisco, Cal.

CCC—See Canton Rubber Works.

Canton Rubber Works, 209 Washington St., Boston, Mass. "CCC."

Chamberlain Co., B. F., 184 Summer St., Boston, Mass.

Cincinnati Rubber Mfg. Co., Cincinnati, O. "Norka," "Fidelity," "Losant," "Sandow," "Puritan." (See page 523.)

Cleveland—See Mechanical Rubber Co.

Combination Rubber Mfg. Co., Bloomfield, N. J.

Conqueror—See Voorhees Rubber Mfg. Co.

Continental Rubber Works, 1903 Liberty St., Erie, Pa. "Vitalic."

Cyrus—See Electric Hose & Rubber Co.

Dugas-Hundley Corp., 29 W. 34th St., New York, N. Y. "Reliance."

Dural Rubber Corp., Maple Ave., Flemington, N. J.

Duro—See Electric Hose & Rubber Co.

Electric Hose & Rubber Co., 12th & Duro Sts., Wilmington, Del. "Duro," "Laconic," "Cyrus," "Velvet," "Supero," "Barcus."

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For Carburetors, Heaters, Automobile Wiring

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For Exhaust, Carburetors

The constantly increasing number of cars and trucks of national reputation which use tubing of our manufacture as standard equipment is our claim to your attention. Our business is built on quality and service.

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The Cincinnati Rubber Mfg. Co.

Cincinnati, Ohio

LOSANT — Air Hose — Extra heavy, for Public Garage use. Does not require wire wrapping.
FIDELITY Air Hose—for Private Garage use.
NORKA Radiator Hose.
PURITAN—Gasoline Hose.
ARNO—Brake Lining.
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SANDOW—Fibre Sheet.
ROYAL—Red and Black Asbestos Sheet.
OLD CROW—Valve Stem Packing.
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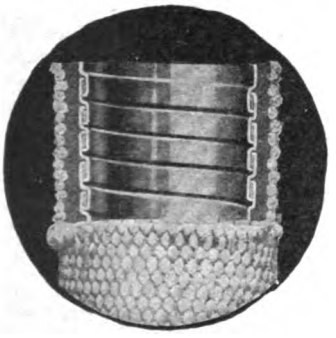
Special Rubber Parts moulded to order.

Specify TRIPLEXD—Be Sure of Service



There is no hose exactly like TRIPLEXD. TRIPLEXD construction (the way the metal, rubber and fabric are built into a permanent unit) explains TRIPLEXD performance.

Triplexd Gasoline Hose is the strongest, most flexible and durable gasoline, oil and paint spray hose.

It will give you better service than any other hose at any price.

List Prices

(Substantial discounts quoted on request)

Size (Inside diameter)	Hose per ft.	Coupling
½ inch	$0.70	$2.00
¾ inch	1.00	2.40
1 inch	1.20	3.90
1¼ inch	1.80	6.00

Prices of larger sizes on application

We make and carry in stock couplings for all standard gasoline pumps. Briggs Standard Pipe Thread furnished unless otherwise specified.

Guarantee

Every length of TRIPLEXD Pump Hose bears a serial number and is specifically guaranteed for one year's service.* We stand back of every length of TRIPLEXD in the world.

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XXX GASOLINE HOSE XXX

*The average service life of TRIPLEXD is over two years.

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230 Tillary St.
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HOSE, Rubber (Continued)

Empire Rubber & Tire Co., Mulberry St. & Clinton Ave., Trenton, N. J.
Eno Rubber Co., 1026 S. Los Angeles St., Los Angeles, Cal. "J. E."
Essex Rubber Co., May & Beakes Sts., Trenton, N. J.
Everware Rubber Co., 241 Oregon St., Milwaukee, Wis.
Federal Rubber Co. (Cudahy), Milwaukee, Wis.
Fidelity—See Cincinnati Rubber Mfg. Co.
Goodrich Co., B. F., S. Main St., Akron, O.
Hamilton Rubber Mfg. Co., Mead & Prince Sts., Trenton, N. J.
Hewitt Rubber Co., 240 Kensington Ave., Buffalo, N. Y.
Hide Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind. (See page 121.)
Home Tire Co., Trenton, N. J.
J. E.—See Eno Rubber Co.
Laconic—See Electric Hose & Rubber Co.
Losant—See Cincinnati Rubber Mfg. Co.
Manhattan Rubber Mfg. Co., Willett St., Passaic, N. J.
Mechanical Rubber Co., 307 W. Randolph St., Chicago, Ill. "Usco."
Mechanical Rubber Co., C. & P. & Nickel Plate R. R., Cleveland, O. "Cleveland."
Mikesell Brothers Co., 176-78 La Salle St., Chicago, Ill. (See page 297.)
Milford Rubber Works, Milford, Ill.
National India Rubber Co., Bristol, R. I.
New York Belting & Packing Co., 91 Chambers St., New York, N. Y.
Norka—See Cincinnati Rubber Mfg. Co.
Pennsylvania Rubber Co., Jeannette, Pa.
Puritan—See Cincinnati Rubber Mfg. Co.
Quaker City Rubber Co., 629 Market St., Philadelphia, Pa.
Reliance—See Dugas-Hundley Corp.
Sandow—See Cincinnati Rubber Mfg. Co.
Sterling—See Boston Woven Hose & Rubber Co.
Supero—See Electric Hose & Rubber Co.
Thermoid Rubber Co., Trenton, N. J. (See page 543.)
United States Rubber Co., 1790 Broadway, New York, N. Y.
United & Globe Rubber Co., Prospect & Frasier Sts., Trenton, N. J.
Usco—See Mechanical Rubber Co.
Velvet—See Electric Hose & Rubber Co.
Vitalic—See Continental Rubber Works.
Voorhees Rubber Mfg. Co., 20-56 Bostwick Ave., Jersey City, N. J. "Conqueror."
Whitehead Bros. Rubber Co., Trenton, N. J.
Woven Steel Hose & Rubber Co., Trenton, N. J.

HOT ROLLED STRIP STEEL—See Steel, Hot Rolled Strip

HOUSING BRACES FOR FORDS—See Braces, Drive Shaft Housing

HOUSING PULLERS FOR FORDS—See Pullers, Axle Housing

HOUSINGS, Pressed Steel Axle

(See also Stampings, Steel)

Bossert Corp., Utica, N. Y. (See page 897.)
Crosby Co., Buffalo, N. Y. (See page 899.)
Detroit Pressed Steel Co., Detroit, Mich. (See page 1203.)
Hale-Kilburn Corp., 1800 Lehigh Ave., Philadelphia, Pa.
Hydraulic Pressed Steel Co. of the Hydraulic Steel Co., Cleveland, O. (See page 439.)
La France Truck Co., Ward, Grand Central Ave. & 11th St., Elmira Heights, N. Y.
Parish Mfg. Co., Reading, Pa. (See page 431.)
Parish & Bingham Corp., Cleveland, O. (See pages 427 to 430.)
Savage Arms Corp., Sharon, Pa.
Smith Corp., A. O., Milwaukee, Wis. (See page 671.)
Worcester Pressed Steel Co., Worcester, Mass. (See page 919.)

HUB BOLTS, AIRCRAFT—See Bolts, Aircraft Propeller Hub

HUB BORERS—See Machines, Aircraft Propeller Hub Boring

HUB BORING MACHINES—See Machines, Aircraft Propeller Hub Boring

HUB BRAKES—See Brakes, Expanding and Contracting

HUB CAP WRENCHES FOR FORDS—See Wrenches, Hub Cap

HUB CAPS—See Caps, Hub

HUB DRUMS—See Winches and Blocks, Car Extracting

HUB FLANGES, AIRCRAFT PROPELLER—See Hubs, Aircraft Propeller

HUBS, Airplane

Eclipse Machine Co., Elmira, N. Y. (See page 525.)

HUBS, Demountable, for Fords

(For Demountable Wheels—See Wheels, Demountable)

Angiers, 500 N. Vermillion St., Streator, Ill.
Autoware Corp., 441 State St., Detroit, Mich. "Dann."
Bronxco Wheel Co., 585-87 Jackson Ave., New York, N. Y.
Dann—See Autoware Corp.
Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass. "Minute." (See page 417.)
Minute—See Hill-Smith Metal Goods Co.
Peerless Products Co., Peerless Bldg., Toledo, O.
Rapid Change Wheel Co., 50 Division St., S. E., Grand Rapids, Mich.
Simplicity Mfg. Co., 1981 E. 97th St., Cleveland, O.
Stone Mfg. Co., 1502 Michigan Ave., Chicago, Ill. (See page 807.)
Telford—See White Machine Works.
White Machine Works, A. E., Eau Claire, Wis. "Telford."

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194 Motor Car and Truck Builders Use It

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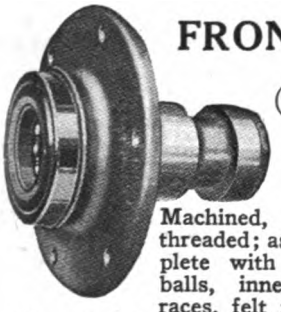
HUBS for FORDS FRONT and REAR

Our own high-grade MALLEABLE IRON is used in the making of these HUBS, and this basic quality, in connection with the high class workmanship put on the casting, enables us to offer a HUB, either for the Front or for the Rear, that is superior in every respect.



FRONT HUB

(Less Flange and Hub Bolts)

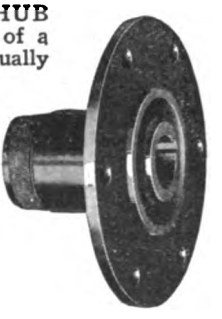
Machined, drilled and threaded; assembled complete with Hoover "A" balls, inner and outer races, felt ring and dust collar. Drilled for application of speedometer gear.

Packed 36 in a case. Method of packing eliminates any chance for damage due to rough handling. Approximate shipping weight—185 lbs. per case.

REAR HUB

(Less Flange and Hub Bolts)

Completely machined, taper bored, La Pointe broached keyway. Threaded for hub cap and ready to install. Workmanship put on this HUB will be found to be of a higher order than usually expected.



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HUBS, Motorcycle

B-N—See Burgess-Norton Mfg. Co.

Burgess-Norton Mfg. Co., Geneva, Ill. "B-N." (See page 735.)

Ramsdell Specialty Co., 667 W. Boylston St., Worcester, Mass.

Standard Parts Co., Cleveland, O. (See page 1149.)

HUBS, Wheel

(For Hub Flanges—See Flanges, Pressed Steel)

American Pulley Co., 4200 Wissahickon Ave., Philadelphia, Pa.

Bossert Corp., Utica, N. Y. (See page 897.)

Crosby Co., Buffalo, N. Y. (See page 899.)

Kelsey Wheel Co., Detroit, Mich. (See page 1063.)

Maryland Metal Products Co., Hagerstown, Md.

Salisbury Axle Co., Jamestown, N. Y. (See page 1086.)

Standard Gear Co., 5930 Commonwealth Ave., Detroit, Mich.

HUBS, Wheel for Fords

Allith-Prouty Co., Danville, Ill. (See page 525.)

HUBS and HUB FLANGES, Aircraft Propeller

Dunkirk Axle Corp., Dunkirk, N. Y. (See page 1183.)

HULLS, Flying Boat

Aeromarine Plane & Motor Corp., Keyport, N. J.

Alexander Aircraft Corp., Alexander, Va.

Boeing Airplane Co. (Georgetown), Seattle, Wash.

Curtiss Aeroplane & Motor Corp., 65 Churchill St., Buffalo, N. Y.

Curtiss Aeroplane & Motor Corp., Garden City, N. Y.

Curtiss Engineering Corp., Garden City, N. Y.

Gallaudet Aircraft Corp., East Greenwich, R. I.

L. W. F. Engineering Co., Third Ave. & Eighth St., College Point, N. Y.

Lawley Boat Co., Boston, Mass.

Martin Co., Glenn L., 16800 St. Clair Ave., Cleveland, O.

Palmer-Simpson Corp., Saranac, N. Y.

Reliance Motor Boat Co., 207th St. & Harlem River, W., New York, N. Y.

Schneider Bros. Instrument Co., 350-52 Palisade Ave., Jersey City, N. J.

Standard Aero Corp. of N. Y., Elizabeth, N. J.

Thomas-Morse Aircraft Corp., Ithaca, N. Y.

Wright-Martin Aircraft Corp., New Brunswick, N. J.

HUMIDIFIERS—See Moisteners, Air

HYDRAULIC TESTING DYNAMOMETERS —See Dynamometers, Hydraulic Testing

HYDRO-AIRPLANES—See Airplanes, Section 1

HYDROMETERS, Testing

(For testing Battery Electrolyte, Gasoline, etc.)

A. E. M.—See Moeller, A. E.

American Thermo-Ware Co., 16 Warren St., New York, N. Y. "Autocrat."

Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. (See page 81.)

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for Workrite Hydrometers.) (See page 275.)

Autocrat—See American Thermo-Ware Co.

Battery Equipment & Supply Co., 1458-60 S. Michigan Blvd., Chicago, Ill. (See page 387.)

Beck & Co., Oscar, 280 Maujer St., Brooklyn, N. Y.

Beckley-Ralston Co., Michigan Blvd. & 18th St., Chicago, Ill. "Master." (See page 61.)

Breaknot—See Edelmann & Co.

Dependable—See Universal Products Co.

Dossman Accessory Co., 2905 Marshall Ave., Cincinnati, O.

Edelmann & Co., E., 2138 N. Crawford Ave., Chicago, Ill. "Breaknot," "Testometer."

Freezometer—See Taylor Instrument Cos.

Genco—See General Scientific Equipment Co.

General Scientific Equipment Co., (North Philadelphia), Philadelphia, Pa. "Genco."

Griebel Instrument Co., River St., Carbondale, Pa.

Hydrokit—See Steiner Mfg. Co.

Lacey Co., Grand Rapids, Mich. "Yankee." (See page 527.)

Luthy Hydrometer Co., 97 Woodward Ave., Detroit, Mich.

Master—See Beckley-Ralston Co.

Moeller, A. E., 261 Sumpter St., Brooklyn, N. Y. "A. E. M." (See page 527.)

Optical Specialties Co., 132 Church St., New York, N. Y. "Test Right."

Queen-Gray Co., 616-18 Chestnut St., Philadelphia, Pa.

Rieker Instrument Co., 1919-21 Fairmount Ave., Philadelphia, Pa.

Stadco—See Stadeker Metal Specialty Co.

Stadeker Metal Specialty Co., 310 S. Canal St., Chicago, Ill. "Stadco."

Steiner Mfg. Co., 590-99 Jackson Ave., Long Island City, N. Y. "Hydrokit."

Storage Battery Supply Co., 239 E. 27th St., New York, N. Y.

Taylor Instrument Companies, 95 Ames St., Rochester, N. Y. "Freezometer."

Test Right—See Optical Specialties Co.

Testometer—See Edelmann & Co.

Universal Products Co., 908 W. Chicago Ave., Chicago, Ill. "Dependable."

Weinhagen & Hespe, 159-65 Leonard St., New York, N. Y.

Weiss & Son, Albert A., 572 Gates Ave., Brooklyn, N. Y.

Workrite Mfg. Co., 5602 Euclid Ave., Cleveland, O.

Yankee—See Lacey Co.

HYDROSTATIC DYNAMOMETERS — See Dynamometers, Hydrostatic

IGNITION CABLE—See Wire, Insulated

IGNITION CUT-OUTS FOR FORDS—See Cut-Outs, Automatic Ignition

IGNITION DYNAMOS—See Magnetos, Ignition

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Ford Car Type

Of standard design, perfect pressed steel shell, Egyptian grey fibre race-way. Accurately fitted and ground segments, fibre insulated terminal plugs.

Inside assembly, or brush of pressed steel with case hardened roller, bearing on a case hardened steel bushing anchored, (not loose) between side frames.

Tested to 120 volts before delivery.

List price.....$1.75

YANKEE HYDROMETER

Licensed under the Freas Patents. An exceptionally efficient and durable hydrometer of the "Safety Type". Securely packed in wood case. List price.....$1.25

PISTONS

for fifty-seven different cars. regular and all standard oversizes. Made of the finest semi-steel, and machined to the exact manufacturers limits, or closer.

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THE LACEY COMPANY
GRAND RAPIDS, MICHIGAN

Economy Dump and Express Bodies

Economy Bodies are constructed of Steel throughout and are built in two sizes 35 and 54 Cubic Ft. (Water Level)

Worm-Driven Hand-Hoist Holds Body at Any Angle

Reversible Tailgate with Scuttle Door

Body Hoist and Sub-Frame Complete in One Unit weigh less than the allowable body weight of a one-ton chassis. The whole unit costs less than the price of a power hoist alone. Can be installed on the truck by anybody.

IMMEDIATE SHIPMENTS

Commercial Passenger Bodies for Fords and other Trucks

"HIGHWAY" Trailers—four-wheel, pole, lumber, fifth-wheel and many other types

Whatever may be your haulage problems—we can help you solve them. Write us

We build truck bodies of every description

Economy Hoist & Body Co.
405 Lexington Ave. New York

A. E. M.

Freezometer and Battery Test-O-Meter

Below is brief description of two very necessary motor car accessories needed by every car owner.

Write us today and we will send you our terms to the trade.

FREEZOMETER

Radiators will freeze. Every year thousands are destroyed from this cause.

The "Freezometer" is the only article of its kind. It is an assurance against frozen radiators or cracked cylinders.

Another accessory that every car owner should have.

Retails for $1.50.

BATTERY TEST-O-METER

is used for determining the charge, mixing the acids, and diagnosing the troubles of Storage Batteries, Motor Trucks, etc.

This instrument also has an exclusive patented (non-stick) feature, which makes it impossible for the hydrometer to stick to the side of the barrel.

Retails for $1.50.

Write us today for terms to the trade

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261 Sumpter St. BROOKLYN, N. Y.

Automotive Equipment

Atwood Grease Cabinets
Connecticut Ignition and Switches
Stanley Self-Oiling Springs
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F. H. & S. COMPANY
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IGNITION INTERRUPTERS — See Interrupter, Automatic Airplane Ignition

IGNITION SWITCH CONTROLS — See Controls, Ignition Switch

IGNITION SWITCHES—See Switches, Ignition

IGNITION SYSTEMS, SINGLE SPARK—See Systems, Battery Ignition

IGNITION TIMERS—See Timers, Ignition

IGNITION WINDINGS — See Windings, Starter and Ignition

IGNITION WIRE—See Wire, Insulated

IGNITION WIRING FOR FORDS—See Sets, Wiring

IMITATION LEATHER — See Leather, Artificial

IMPULSE STARTERS—See Starters, Impulse

INCANDESCENT LAMPS — See Lamps, Miniature Incandescent

INCIDENCE INDICATORS, AIRPLANE—See Indicators, Airplane Incidence

INCLINOMETERS, Airplane

Rieker Instrument Co., 1919-21 Fairmount Ave., Philadelphia, Pa.

Taylor Instrument Companies, 95 Ames St., Rochester, N. Y. "Tycos."

Tycos—See Taylor Instrument Cos.

INDICATING BAROMETERS—See Barometers, Altitude Indicating

INDICATING METERS—See Meters, Water Temperature Indicating; also Barometers, Altitude Indicating; also Meters, Truck Load Indicating; also Meters, Oil Temperature Indicating; also Meters, Distance Recording; also Speedometers

INDICATING SIGNALS—See Signals, Direction Indicating or Traffic

INDICATORS, Aircraft Speed

Foxboro Co., Neponset Ave., Foxboro, Mass.

Jones-Motrola, 29 W. 35th St., New York, N. Y.

Pioneer Instrument Co., 246 Greenwich St., New York, N. Y.

Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.

Van Sicklen Co., Elgin, Ill.
(See page 1105.)

INDICATORS, Airplane Banking

Pioneer Instrument Co., 246 Greenwich St., New York, N. Y.

Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.

INDICATORS, Airplane Drift

Pioneer Instrument Co., 380 Canal St., New York, N. Y.

Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.

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Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.

INDICATORS, AUTOMOBILE SPEED—See Speedometers

INDICATORS, CIRCULATION—See Gages, Water; Also Sight Feeds

INDICATORS, COMPRESSION—See Gages, Cylinder Compression

INDICATORS, DISTANCE OR MILEAGE—See Meters, Distance

INDICATORS, FUEL LEVEL—See Gages, Gasoline Tank

INDICATORS, Gasoline Engine

Dayton-Wright Division of The General Motors Corp., Dayton, O. "Midgley."

Midgley—See Dayton-Wright Division.

INDICATORS, GRADE—See Meters, Grade

INDICATORS, OIL CIRCULATION—See Sight Feeds, Independent

INDICATORS, SPARK—See Gaps, Spark

INDICATORS, SPEED—See Indicators, Aircraft Speed; also Speedometers

INDICATORS, STORAGE BATTERY TEMPERATURE—See Thermostats, Storage Battery

INDICATORS, TANK—See Gages, Gasoline Tank

INDICATORS, TIRE PRESSURE — See Gages, Tire Pressure

INDICATORS, Tractor Engine Speed

Waltham Watch Co., Waltham, Mass.

INDICATORS, WATER CIRCULATION—See Gages, Water Circulating

INFLATORS, TIRE—See Pumps; also Tanks

INJECTORS, Boiler Feeding

American Injector Co., 1469 14th Ave., Detroit, Mich. "U. S."

U. S.—See American Injector Co.

INJECTORS, GREASE—See Guns, Grease

INJECTORS, WATER—See Moisteners, Air

INNER TIRE SHOES—See Shoes, Inner Tire

INNER TUBE BAGS—See Covers, Spare Tire

INNER TUBE MANDRELS—See Mandrels, Inner Tube

INNER TUBE TESTING TANKS—See Tanks, Inner Tube Testing

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SPECIFY THEM OF YOUR JOBBER—HE HAS THEM

Double Bent Ends Shaped Screw Drivers

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No. 1766—3" Blade.....$0.35
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No. 725
⅜x3/32x4"..... $0.25

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⅜x4/32x4"..... .25

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⅜x5/32x4"..... .25

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⅜x7/32x4"..... .25

No. 730
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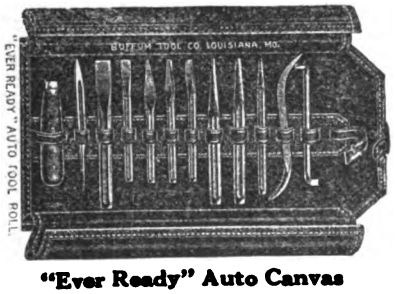

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Send for Special Tool Kit Catalog

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5/16x½x9".....$0.30

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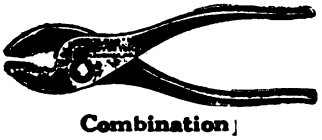

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No. 2375—5" Blued.....$0.35
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No. 2377—6" Blued..... .50
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Buick Valve Lifters

Price $2.00

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INNER TUBES—See Tubes, Inner

INSERTS, CLUTCH—See Cork, Brake and Clutch

INSERTS, SPRING LEAF—See Strips, Spring Leaf

INSPECTING MACHINES, TIRE—See Machines, Tire Inspecting

INSPECTION LAMPS—See Lamps, Electric Hand

INSTRUMENT BOARDS—See Cowls

INSTRUMENTS, Electrical Circuit Testing

(For Ammeters and Voltmeters—See Ammeters; For Battery Gages—See Gages, Battery.)

Ambu—See American Bureau of Engineering.

American Bureau of Engineering, Michigan Ave. & 16th St., Chicago, Ill. "Ambu." (See page 485.)

Anderson—See West Mfg. Co.

Bestall Electric Co., Lytton Bldg., Chicago, Ill. "Testzall."

Cliff Instrument Co., Lee, 1748 W. 48th St., Los Angeles, Calif.

Cowle Electric Co., E. S., 1816 McGee St., Kansas City, Mo.

Defectometer—See Niehoff & Co.

Dorbeck, R. V., Brighton Ave., Long Branch, N. J.

Durham Co., P. J., 244 W 49th St., New York, N. Y. (See page 531.)

Edgerton & Co., R. G., Suffolk, Va.

Electric Power Maintenance Co., 1101-09 Monroe St., Toledo, O. "Testaphone."

Generometer—See Niehoff & Co.

Harlan Ignition Instrument & Mfg. Co., Watsonville, Cal.

Hugo Mfg. Co., J., 218 George St., New Haven, Conn.

Igni-Test—See Testall Electric Mfg. Co.

Mag Fixer—See Stahl Rectifier Co.

Mohawk Electric Mfg. Co., 15 Kirk Pl., Newark, N. J.

Niehoff & Co., Paul G., 232-42 E. Ohio St., Chicago, Ill. "Defectometer," "Generometer," "Teskart." (See page 677.)

Peco—See Phillips & Co.

Phillips & Co., H. E., Union City, Ind. "Peco."

Price Storage Battery Co., W. F., 1618 N. Broad St., Philadelphia, Pa.

Quality Electrical Products Co., 907 E. 15th St., Kansas City, Mo. (See page 1219.)

Shontz Co., H. B., 157 W. 54th St., New York, N. Y. (Metropolitan Distributors for "Ambu" Instruments.) (See page 733.)

Stahl Rectifier Co., 1401 W. Jackson Blvd., Chicago, Ill. "Mag Fixer."

Teskart—See Niehoff & Co.

Testall Electric Mfg. Co., 610 Market St., San Antonio, Tex. "Igni-Test."

Testaphone—See Electric Power Maintenance Co.

Testzall—See Bestall Electric Co.

West Mfg. Co., 807 Keeney St., Abilene, Kans. "Anderson."

INSTRUMENTS, Engine Testing

(For locating knocks in engines)

American Electric Co., 6401 S. State St., Chicago, Ill. "Sonoscope."

Chapman—See S. C. M. Corp.

Dearborn Equipment Co., Kalamazoo, Mich. (See page 403.)

Fairbanks Co., New York, N. Y. (Sole distributors for Hempy-Cooper Mfg. Co., Kansas City, Mo. "Hammett.") (See pages 137 to 140.)

Hammett—See Fairbanks Co.

Hempy-Cooper Mfg. Co.—See Fairbanks Co.

Hopewell Bros., Watertown, Mass. "Vibrator." (See page 629.)

Pilling & Son Co., G. P., Arch & 23d Sts., Philadelphia, Pa. "Phonendoscope."

Phonendoscope—See Pilling & Son Co.

S. C. M. Corp., 105 E. 19th St., New York, N. Y. (Sole Distributors for Chapman Mfg. Co., St. Louis, Mo.)

Sonoscope—See American Electric Co.

Vibracator—See Hopewell Bros.

INSTRUMENTS, FELT TESTING—See Instruments, Rubber and Felt Testing

INSTRUMENTS, Gear Testing

Gleason Works, 1000 University Ave., Rochester, N. Y.

INSTRUMENTS, Metal Testing

(For Metal Testing Machines—See Machines, Metal Testing)

Brinell—See Holz, Herman A.

Brinell—See Pittsburgh Instrument & Machine Co.

Gries Bros., 450-52 E. 148th St., New York, N. Y.

Holz, Herman A., 17 Madison Ave., New York, N. Y. "Brinell."

Pittsburgh Instrument & Machine Co., 40 Water St., Pittsburgh, Pa. "Brinell."

INSTRUMENTS, MOTOR TESTING—See Instruments, Engine Testing

INSTRUMENTS, Rubber and Felt Testing

Advance Felt & Cutting Co., 315E S. Jefferson St., Chicago, Ill. "Modulimeter." (See page 411.)

Modulimeter—See Advance Felt Specialty & Cutting Co.

Scleroscope—See Shore Instrument & Mfg. Co.

Shore Instrument & Mfg. Co., 9025-29 Van Wyck Ave., Jamaica, N. Y. "Scleroscope."

INSTRUMENTS, Storage Battery Testing

(See also Gages, Battery; also Instruments, Electric Circuit Testing; also Hydrometers)

American Bureau of Engineering, Michigan Ave. & 16th St., Chicago, Ill. (See page 485.)

Cowle Electric Co., E. S., 1816 McGee St., Kansas City, Mo.

Hyrate—See Service Station Supply Co.

Quality Electrical Products Co., 907 E. 15th St., Kansas City, Mo. (See page 1219.)

Service Station Supply Co., 124 E. Larned St., Detroit, Mich. "Hyrate."

Shontz Co., H. B., 157 W. 54th St., New York, N. Y. "Shuro." (See page 733.)

Shuro—See Shontz Co.

Sterling Mfg. Co., 2845-53 Prospect Ave., Cleveland, O.

Thompson Battery Tester Co., Greensburg, Pa.

Weindenhoff, Joseph, 4352 W. Roosevelt Rd., Chicago, Ill.

Weston Electrical Instrument Co., 16 Weston Ave., Newark, N. J. (See page 85.)

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AC Transformer Armature Tester
Price $22.50

Durham Testing Equipment for Electrical Service Stations

AC Transformer Armature Tester
(With 110-volt ground test)
Quickly and surely locates "shorts" or "grounds" in automotive armatures. Accurately tests all armatures in general use. Necessary in any service station.

Type A-Universal Holding Stand
Holds securely for testing any style or shape of generator, magneto or starting motor. Provided with a lateral and transverse adjustment for belt tightening and aligning with drive pulley.

These instruments were originally designed for our own use; now giving thorough satisfaction in many large service stations.

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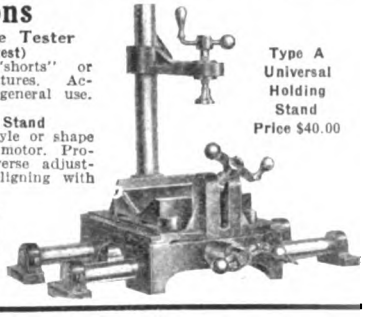
244 West 49th St., New York City.



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Price $40.00

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Made "*Right*" in Philadelphia
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Bronx Bearing & Ignition Co., 7 E. 170th St., Bronx, N.Y.

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NEW YORK — 1876 Broadway, 18 W. 62nd Street
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RUBBER SUPERFIX REPAIR

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for making a permanent repair on tubes and casings

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INSULATED STAPLES—See Staples, Insulated

INSULATED WIRE—See Wire, Insulated

INSULATING COMPOSITION—See Composition, Insulating

INSULATING TAPE—See Tape, Insulating and Tire

INSURANCE, Automotive

(Covering insurance companies and insurance brokers who advertise in this publication)

Hollister, L. T., 92 William St., New York, N. Y. (See page 1187.)

Home Insurance Co., New York, N. Y. (See page 59.)

INTAKE MANIFOLDS—See Manifolds, Intake and Exhaust

INTAKE STRAINERS—See Cleaners, Air

INTAKE WASHERS—See Cleaners, Air

INTENSIFIERS, SPARK—See Gaps, Spark

INTERNAL BRAKE SHOES FOR FORDS—See Shoes, Brake

INTERNAL GRINDERS—See Grinders, Internal

INTERRUPTERS, Automatic Airplane Ignition

(Instrument to automatically interrupt the engine ignition, thereby stopping the engine in the event of the propeller breaking)

Duplex Engine Governor Co., 58 Flatbush Ave., Ext., Brooklyn, N. Y. (See page 469.)

IRON CASTINGS—See Castings

IRON CEMENT—See Cement, Cast Iron

IRON LINED BRASS TUBING—See Tubing, Iron Lined

IRON RIVETS—See Rivets, Iron

IRON WASHERS—See Washers, Iron

IRONS, Body or Top

(For Top Holders—See Holders, Top; See also Forgings, Drop)

Ashtabula Bow Socket Co., 99-101 Prospect St., Ashtabula, O.

Auto Specialties Mfg. Co., St. Joseph, Mich. (See page 421.)

Bonney Vise & Tool Works, Allentown, Pa. (See page 437.)

Brewer Tichener Corp., Cortland, N Y. (See page 567.)

Cleveland Hardware Co., 4500 Hamilton Ave., Cleveland, O.

Columbus Bolt Works Co., Columbus, O. (See page 155.)

Desoco—See Detroit Socket Co.

Detroit Socket Co., 2744 W. Jefferson Ave., Detroit, Mich. "Desoco."

Enterprise Brass & Plating Co., Sixth & Baymiller Sts., Cincinnati, O.

Michigan Bolt & Nut Works, ft. Meldrum Ave., Detroit, Mich.

Monarch Carriage Goods Co., Cincinnati, O. (See page 407.)

Motor Products Corp., 11803 Mack Ave., Detroit, Mich. (See page 857.)

IRONS, Electric Soldering

Ambu—See American Bureau of Engineering.

American Bureau of Engineering, Michigan Ave. & 16th St., Chicago, Ill. "Ambu." (See page 485.)

Baco Electric Co., Bode, Ia. "Soderwand."

Clemens Electrical Corp., 725 Main St., Buffalo. N. Y. "J. C."

Dover Mfg. Co., Dover, O.

General Electric Co., Schenectady, N. Y. (See page 793.)

J. C.—See Clemens Electrical Corp.

Shonts Co., H. B., 157 W. 54th St., New York, N. Y. (See page 733.)

Soderwand—See Baco Electric Co.

Vulcan Electric Heating Co., 107 W. 13th St., New York, N. Y.

IRONS, Slat

(For Bow Sockets—See Sockets, Bow)

Amesbury Brass & Foundry Co., Amesbury, Mass.

Scherer & Co., H., 440 E. Jefferson Ave., Detroit, Mich.

Woodruff & Sons Co., Walter W., Mount Carmel, Conn.

IRONS, SOLDERING—See Irons, Electric Soldering

IRONS, TIRE—See Tools, Tire

IRONS, TOP—See Irons, Body or Top

JACK SHAFTS—See Countershafts

JACKS, Lifting

(For Wheeled and Two and Four Wheel Lifting Jacks—See Jacks, Special)

APC—See Ashland Products Co.

Acme—See Spencer's Sons.

Ajax Auto Parts Co.—See Brandenburg Bros. & Eccleston.

Alrite—See National Jack & Mfg. Co.

Alsteel Mfg. Co., 7-9 Carlyle St., Battle Creek, Mich. "Aro." (See page 351.)

American Chain Co., Bridgeport, Conn. "Weed." (See page 535.)

Aro—See Alsteel Mfg. Co.

Ashland Products Co., 50 E. Ninth St., Ashland, O. "APC." (See page 539.)

Atlas Mfg. Co., W. Central Ave., Orlando, Fla.

Badger—See Walker Mfg. Co.

Barrett—See Duff Mfg. Co.

Barth Mfg. Co., Milwaukee, Wis. (See page 557.)

Benedict—See National Machine Co.

Black Jack Co., Funk, O.

Brandenburg Bros. & Eccleston, 1112 S. Michigan Ave., Chicago, Ill. (Sole Distributors for Ajax Auto Parts Co., Racine, Wis. "Rapco.")

Buckeye Jack Mfg. Co., Alliance, O.

Cassidy Co., Inc., Edward A., 23 W. 43d St., New York, N. Y. (Sales Department for F. W. Mann Co., Milford, Mass.) "Kimball." (See page 87.)

Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."

Cleveland Mfg. Co., 2784 Tennyson Rd., Cleveland, O.

Coe-Stapley Mfg. Corp., West Haven, Conn. "Peteler." (See page 539.)

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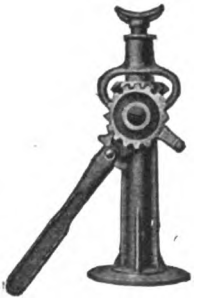
No. 46 "RELIABLE"

Capacity — 3000 lbs. Weight — 10 lbs. Height, lowered—11½", raised — 17½". Broad, flat base. Solid steel rack-bar with large machine-cut teeth. One of the most popular jacks in the entire "Reliable" Line.

In this one line you will find a jack to suit the requirements of every possible buyer, and while there is no such thing as a "cheap" Reliable Jack, the line includes moderate priced jacks of the characteristic dependability and sureness of performance which have made the name "Reliable" a safe guide to satisfaction.

Write us soon regarding your Spring needs.

ELITE MFG. COMPANY
Ashland, Ohio



No. 1 "RELIABLE"

Made in five sizes, from 3000 to 6000 lbs. capacities. Weights from 4½ to 7 pounds. Patented crank motion enables the jack to be brought into action in less time than with any other jack and obviates pumping of handle except when actually raising and lowering the load.

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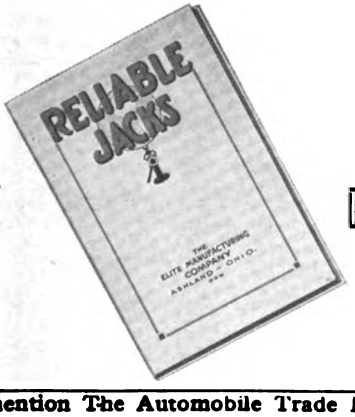

and Describes The Complete Reliable Line

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JACKS, Lifting (Continued)

De Luxe—See National-Standard Co.

Duff Mfg. Co., Pittsburgh, Pa. "Barrett." (See page opposite Inside Back Cover.)

Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.

Elite Mfg. Co., Ashland O. "Reliable." (See page 533.)

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 174 and 175.)

Gibraltar Jack Co., 1902 Broadway, New York, N. Y.

H-C.—See Lane Bros. Co.

Handee—See Racine Handy Mfg. Co.

Hart-Bell Co., 1926 Broadway, New York, N. Y.

Hartford, Edward V., 35 Warren St., New York, N. Y. "Red Rack." (See page 859.)

Hi-Lo—See Rowe Calk & Chain Co.

Indestructo—See Jiffy Jack Co.

Iron City Products Co., Dept. 21, 7501 Thomas Blvd., Pittsburgh, Pa. "Rees." (See page 537.)

Jaxall—See Sunderman Corp.

Jiffy Jack Co., 10209 Quincy Ave., Cleveland, O. "Indestructo."

Joyce-Cridland Co., 333 S. Linden Ave., Dayton, O. "XX Century."

Jump Jack—See Walker Mfg. Co.

Kazoo—See National Standard Co.

Kimball—See Cassidy Co.

Lane Bros. Co., 48 Prospect St., Poughkeepsie, N. Y. "H-C."

Leader—See National Standard Co.

Little Giant—See Pratt Mfg. Co.

Little Giant—See Spencer's Sons.

Manco—See Mann Corp.

Mann Co.—See Cassidy Co.

Mann Corp., Kankakee, Ill. "Manco."

Martin & Co., Edward, 23 S. Clinton St., Chicago, Ill. "Perfection Airite."

Mobilift—See National Jack Co.

National Jack Co., Gest & Evans Sts., Cincinnati, O. "Mobilift."

National Jack & Mfg., Co., 130-34 S. Clinton St., Chicago, Ill. "Airite," "Sturdy."

National Machine Co., Brattleboro, Vt. "Benedict."

National Standard Co., Eighth & Howard Sts., Niles, Mich. "Kazoo," "Standard," "Leader."

Norlund Novelty Co., Williamsport, Pa.

Oliver Mfg. Co., 326 S. Desplaines St., Chicago, Ill. "Peerless."

Peerless—See Oliver Mfg. Co.

Perfect—See Walker Mfg. Co.

Perfection Airite—See Martin & Co.

Peteler—See Coe-Stapley Mfg. Co.

Pratt Mfg. Co., Wm. E., 35 W. Lake St., Chicago, Ill. "Little Giant," "Pup."

Pup—See Pratt Mfg. Co.

Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."

Rapco—See Brandenburg Bros. & Eccleston.

Red Rack—See Hartford, Edward V.

Red Wonder—See Sidel-Rattner Mfg. Co.

Rees—See Iron City Products Co.

Reliable—See Elite Mfg. Co.

Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Sterling."

Rowe Calk & Chain Co., Plantsville, Conn. "Hi-Lo."

Shultis Automotive Corp., 16-22 W. 61st St., New York, N. Y. (Eastern Distributors for "Indestructo" Jacks.) (See page 609.)

Sidel-Rattner Mfg. Co., Bush Terminal, Brooklyn, N. Y. "Red Wonder." (See page 749.)

Simplex—See Templeton, Kenly & Co.

Spencer's Sons, I. S., Fair St., Guilford, Conn. "Acme." "Little Giant."

Standard—See National Standard Co.

Sterling—See Republic Auto Parts Co.

Sturdy—See National Jack & Mfg. Co.

Sunderman Corp., Newburgh, N. Y. "Jaxall." (See page 193.)

Templeton, Kenly & Co., 1020 S. Central Ave., Chicago, Ill. "Simplex."

Topping Bros., 122 Chambers St., New York, N. Y.

Trex—See Trexler Co.

Trexler Co., 1418 Walnut St., Philadelphia, Pa. (Sole Distributor for Twinlock Co., Phila. Pa.) "Trex." (See page 925.)

Triumph—See Walker Mfg. Co.

Twinlock Co.—See Trexler Co.

XX Century—See Joyce-Cridland Co.

Victor—See Walker Mfg. Co.

Walker Mfg. Co., Hamilton & Michigan Sts., Racine, Wis. "Badger," "Triumph," "Perfect," "Victor," "Jump-Jack."

Weed—See American Chain Co.

White Products Co., 2204 S. Michigan Ave., Chicago, Ill.

Whitney Mfg. Co., R. S., 74 Nichols St., Lewiston, Me.

JACKS, LIFTING, FOR FORDS—See Jacks, Special, for Fords

JACKS, Special

(Wheeled, Two and Four Wheel Lifting, Tire Saving, etc.—See also Jacks, Lifting; also Jacks, Tire Saving)

Arrow-Grip Mfg. Co., Glens Falls, N. Y.

B. & M. Mfg. Co., 5810-14 S. Wood St., Chicago, Ill. "Rex," "Block, Jr."

Block, Jr.—See B. & M. Mfg. Co.

Bruhn Mfg. Co., Columbia & 150th Sts., Hammond, Ind.

Cady—See Moore Co.

Continental Auto Parts Co., 1807 E. 17th St., Columbus, Ind. (See page 419.)

Excel—See Randall-Faichney Co.

Horseshoe—See Minnesota Auto Jack Co.

Hovey—See Whetstone & Co.

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Simplicity Products Mfg. Co., Milwaukee, Wis.)

Kutler Mfg. Co., Byron, O.

Marion Malleable Iron Works, Marion, Ind. (See page 219.)

Mid-West Mfg. Co., McKnight Bldg., Minneapolis, Minn. "Red Devil Dolly."

Minnesota Auto Jack Co., Providence Bldg., Duluth, Minn. "Horseshoe."

Moore Co., R. L., 12983 Euclid Ave., Cleveland, O.

Randall-Faichney Co., 76 Atherton St., (Jamaica Plain), Boston, Mass. "Excel."

Red Devil Dolly—See Mid-West Mfg. Co.

Rex—See B. & M. Mfg. Co.

Roll-a-Car—See Walker Mfg. Co.

Simplicity Products Mfg. Co.—See Jonas, C. N. & F. W.

Steel Truck Co., Howell, Mich.

Stucker, J. M. Ottawa, Kans.

Walker Mfg. Co., Hamilton & Michigan Sts., Racine, Wis. "Roll-a-Car."

Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 735.)

Whetstone Co., John H., Court St., Lapeer, Mich. "Hovey."

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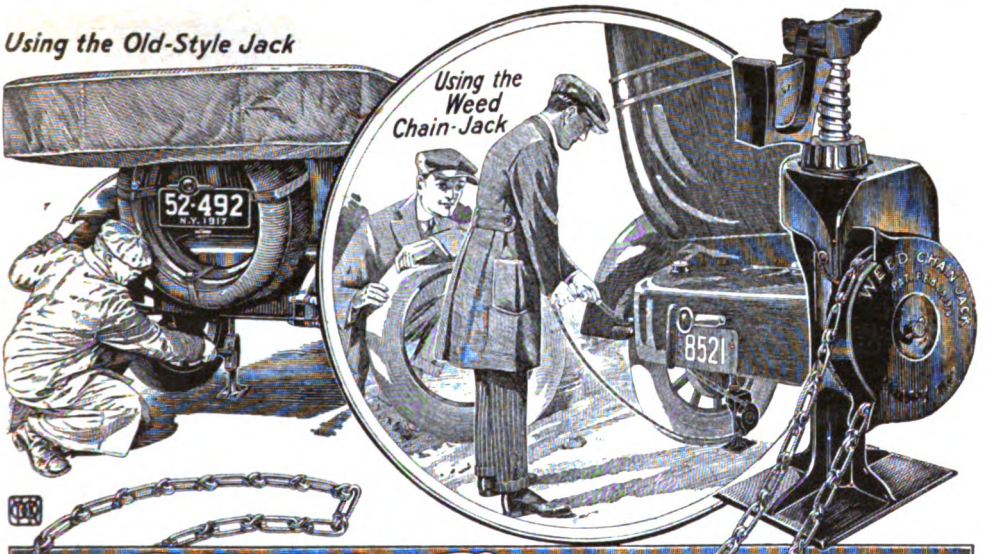

WEED Chain-Jack

THE JACK THAT SAVES YOUR BACK

Simply a few pulls on its chain and the heaviest car is raised or lowered without danger and without exertion.

Every motorist has dreaded using the ordinary jack—an unpleasant operation, to say the least, and constantly fraught with danger and much tiresome work. Now all the unpleasant, disagreeable features have been ***entirely eliminated*** by the Weed Chain-Jack. With it, whether raising or lowering the car, you are always ***out of harm's way***—No knocking of head, or soiling of clothes against springs or other projections—***No skinning of knuckles*** or flying up of a "handle"—***No chance of the car coming down,*** often resulting in serious bodily injury—Infinitely easier to operate than any jack on the market.

To operate a Weed Chain-Jack it is not necessary to get down in a cramped, strained position and grovel in mud, grease or dust under a car to work a "handle" that is apt to fly up, with unpleasant results. ***To lift a car*** with the Weed Chain-Jack, simply give a few pulls on its endless chain while you stand erect—clear from springs, tire carriers and other projections. ***To lower a car*** pull the chain in opposite direction. Up or down—there's no labor.

Once in place you never have to touch a Weed Chain-Jack. You do not have to crawl underneath to either raise or lower the car and after the car is lowered, you haul the jack out from under the car by the chain. ***Much superior*** in safety, economy, utility, simplicity and construction.

You will never be satisfied with any other if once you use a

Weed Chain-Jack

Powerful — Safe — Easily Operated

Has a strong cap, providing the kind of support from which an axle will not slip, while a ***broad base*** prevents the jack from upsetting on uneven roads. ***Every Weed Chain-Jack*** is submitted to a lifting test and will support over twice the weight it is ever required to lift. ***Never gets out of order.*** Gears and chain wheels protected by a stamped-steel housing. ***Chain heavily plated*** to prevent rusting.

The 8 inch and 10 inch sizes are made with an auxiliary step as illustrated above. When in operative position this step adds two inches to the height of the jack.

Size	Height When Lowered	Height When Raised	Height When Raised with Auxiliary Stepup
8 inch	8 inches	12½ inches	14½ inches
10 inch	10 inches	15⅝ inches	17⅝ inches
12 inch	12 inches	18½ inches	No. Aux. Step
12 inch Truck	12 inches	19¼ inches	No. Aux. Step

American Chain Company, Inc.

Bridgeport A C G **Connecticut**

In Canada: Dominion Chain Company, Limited, Niagara Falls, Ontario

Largest Chain Manufacturers in the World

The Complete Chain Line—all types, all sizes, all finishes—from plumbers' safety chain to ships' anchor chain.

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JACKS, Special, for Fords

(Wheeled, Two and Four Wheel Lifting, Etc.)

American—See Fairbanks Co.

Dearborn Equipment Co., Kalamazoo, Mich. (See page 403.)

Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill. "American." (See pages 137 to 140.)

Garage Equipment Co., 241 Fourth Ave., S., Minneapolis, Minn.

Marion Malleable Iron Works, Marion, Ind. (See page 219.)

Moore Co., R. L., 12983 Euclid Ave., Cleveland, O.

Service Station Equipment Co.—See Fairbanks Co.

JACKS, Tire Saving

(For holding car off the floor when not in use; For Two and Four Wheel Lifting Jacks—See Jacks, Special)

APC—See Ashland Products Co.

Alsteel Mfg. Co., 7-9 Carlyle St., Battle Creek, Mich. (See page 351.)

Ashland Mfg. Co., Ashland, O. "Eureka."

Ashland Products Co., 50 E. Ninth St., Ashland, O. "APC." (See page 539.)

Auto Jack Works, 300-08 E. Michigan St., La Grange, Ind. "Detroit."

Beard Auto Lift Co., Pleasant Lake, Ind.

Brocksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.

Brodrib Bros., 59 Congress St., Hartford, Conn.

Buck, Monroe, Glens Falls, N. Y.

Buffington & Co., C. A., Berkshire, N. Y.

Bull Dog—See Toledo Cable Co.

Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O.

Detroit—See Auto Jack Works.

Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O. "Emco."

Ebern Bros. Mfg. Co., Flandreau, S. Dak.

Elite Mfg. Co., Ashland, O. "Reliable." (See page 533.)

Emco—See Eberhard Mfg. Co.

Eureka—See Ashland Mfg. Co.

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 174 and 175.)

Hall Air Lock & Railway Supply Co., Oakville, Ia.

Hoco—See Hoeft & Co.

Hoeft & Co., 400 N. Ashland Ave., Chicago, Ill. "Hoco."

Indestructo—See Jiffy Jack Co.

Jiffy Jack Co., 10209 Quincy Ave., Cleveland, O. "Indestructo."

M. B.—See Metzig Bros.

Martin & Co., Edward, 23 S. Clinton St., Chicago, Ill. "Perfection Alrite."

Metzig Bros., 321 Broadway St., Berlin, Wis. "M. B."

Mobilift—See National Jack Co.

Moore—See Walker Mfg. Co.

National Jack Co., Gest & Evans Sts., Cincinnati, O. "Mobilift."

National Jack & Mfg. Co., 130-34 S. Clinton St., Chicago, Ill.

National Standard Co., Eighth & Howard Sts., Niles, Mich. "Standard."

Oliver Mfg. Co., 326 S. Desplaines St., Chicago, Ill. "Samson."

Oshkosh Auto Jack Mfg. Co.—See Oshkosh Auto Specialties Co.

Oshkosh Auto Specialties Co., 26 Washington St., Oshkosh, Wis. (Distributors for Oshkosh Auto Jack Mfg. Co., Oshkosh, Wis.)

Perfect—See Pratt Mfg. Co.

Perfection Alrite—See Martin & Co.

Pratt Mfg. Co., Wm. E., 35 W. Lake St., Chicago, Ill. "Perfect."

Racine—See Walker Mfg. Co.

Reliable—See Elite Mfg. Co.

S. & S. Automatic Tirease Co., Marysville, Kans.

Samson—See Oliver Mfg. Co.

Shultis Automotive Corp., 16-22 W. 61st St., New York, N. Y. (Eastern Distributors for "Indestructo" Jacks.) (See page 609.)

Sedgwick Mfg. Co., Third & Chestnut Sts., Richmond, Ind.

Springville Wood Specialty Co., Springville, N. Y.

Standard—See National Standard Co.

Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 507.)

Toledo Cable Co., 1035 Grand Ave., Toledo, O. "Bull Dog."

Walker Mfg. Co., Hamilton & Michigan Sts., Racine, Wis. "Moore," "Racine."

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

Wilbur Lumber Co., Honey Creek, Wis.

Will-Burt Co., Orrville, O.

JACKS, Tire Saving, for Fords

(For holding car off the floor when not in use)

Beard Auto Lift Co., Pleasant Lake, Ind.

Esy-Up—See Star Specialty Mfg. Co.

M. B.—See Metzig Bros.

Metzig Bros., 321 Broadway St., Berlin, Wis. "M. B."

Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. "Esy-Up." (See page 507.)

JACKS, TRUCK WHEEL REMOVING—See Cranes, Drags and Jacks, Truck Wheel Removing

JACKS, WHEELED—See Jacks, Special

JARS, Rubber Battery

American Hard Rubber Co., 11 Mercer St., New York, N. Y. "Vulcan," "Mercury."

American Storage Battery Parts Co., 650-60 E. 163d St., Cleveland, O. (Jobbers.) (See page 1195.)

Brunswick-Balke-Collender Co., 623-33 S. Wabash Ave., Chicago, Ill. (See page 1171.)

Luzerne Rubber Co., Muirhead Ave., Trenton, N. J.

Mercury—See American Hard Rubber Co.

Stokes Rubber Co., Jos., Taylor St., Trenton, N. J.

United States Rubber Co., 1790 Broadway, New York, N. Y.

Vulcan—See American Hard Rubber Co.

JIGS—See Dies, Jigs, Tools and Fixtures

JIGS, BABBITTING—See Jigs, Main Bearing Connecting Rod Babbitting

JIGS, Brake Band Riveting, for Fords

Continental Auto Parts Co., 1807 E. 17th Columbus, Ind. (See page 419.)

Hunt Mfg. Co., Geo. L., Boscobel, Wis.

Lewis Co., J. R., Chicago, Ill. (See page 539.)

Universal Tool Co., 435 Woodward Ave., Detroit, Mich. (See pages 984 and 985.)

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Passenger Car Model

REES JACK

DOUBLE WORM GEAR DRIVE

Reg. U.S. Pat. Off.

There is just one test of a jack that really counts—put it under your car or truck and see how easily and quickly it lifts.

The Rees is the practical jack. The patented double-worm-gear-drive makes it powerful, simple, practically unbreakable. It is the jack that makes you say, "I want one," as soon as you see it work.

No.	Capacity	Height Inches	Lift Inches	Weight	List Price Each	West of the Rockies Trade Price Each
1	2 Tons	10¼	5½	13 lbs.	$ 9.00	$ 9.50
5-A	2½ Tons	10¾	6	14 lbs.	10.00	10.50
2	5 Tons	10¾	6	22 lbs.	16.00	17.00
3-A	6 Tons	12¼	6	27 lbs.	20.00	21.00
6-A	6 Tons	14	8	29 lbs.	22.00	23.00
21-A	10 Tons	14¾	9	46 lbs.	38.00	40.00

A—Designates Foot Lift as shown
Nos. 1, 2, 3-A, 5-A, 6-A packed in standard packages of six.
No. 21-A in standard packages of three.

Motor Truck Model

Catalogue No. 501

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Don't miss the opportunity this book opens for you, an opportunity that must be grasped quickly if you wish to realize it to its full. You'll never know what it really means to sell jacks until you've read it, and having read it you'll want to slip it into your pocket and keep it with you at all times.

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Iron City Products Company

Department 21

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JIGS, Connecting Rod Aligning, for Fords

American—See Fairbanks Co.

Auto Mechanics Tool Co., 2501 S. Washington St., Peoria, Ill. "Peoria."

Bean—See Liberty Metal Products Co.

Brodrib Bros., 59 Congress St., Hartford, Conn.

Buckwalter Co., John S., 413-15 N. Mary St., Lancaster, Pa. (See page 1223.)

Carswell-Hammond Mfg. Co.—See Zinke Co.

Clement Machine Shop, 301 W. 68th St., New York, N. Y.

Danielson Tool Co., Fulton St., Wausau, Wis.

Dearborn Equipment Co., Kalamazoo, Mich. (See page 403.)

Dee Tool Co., John, Rock Island, Ill.

Detroit Garage Equipment Co., 406 E. Jefferson Ave., Detroit, Mich.

Eagle Machine Co., 24 N. Noble St., Indianapolis, Ind.

Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill. "American.") (See pages 137 to 140.)

Garage Equipment Co., 241 Fourth Ave., S., Minneapolis, Minn.

Lewis Tool Co., 612 Fifth Ave., S., Minneapolis, Minn.

Liberty Metal Products Co., Front St. & First Ave., Berea, O. "Bean."

Littell Machinery Co., 532-34 Washington St., Spokane, Wash.

Nazett Mfg. Co., 1440 Washington St., Eldora, Ia.

Peoria—See Auto Mechanics Tool Co.

Railway Specialty Co., Atchison, Kans. "Rysco."

Rysco—See Railway Specialty Co.

Service Station Equipment Co.—See Fairbanks Co.

Storm Mfg. Co., Dept. L., Minneapolis, Minn. (See page 983.)

Tribune Engineering Co., Front St., Owego, N. Y.

Wisconsin Welding & Cutting Co., 556 E. Water St., Milwaukee, Wis. (See page 1153.)

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Carswell-Hammond Mfg. Co., Boone, Ia.) (See page 313.)

JIGS, DRIVE SHAFT BUSHING REAMING, FOR FORDS—See Reamers, Drive Shaft Bushing

JIGS, Main Bearing and Connecting Rod Babbitting

Bremer Co., O. B., 222 Division St., Burlington, Iowa. (See page 1163.)

JIGS, Main Bearing and Connecting Rod Babbitting, for Fords

Bremer Co., O. B., 222 Division St., Burlington, Iowa. (See page 1163.)

Chicago Mfg. & Distributing Co., 411 S. Sangamon St., Chicago, Ill. "C. M. & D."

C. M. & D.—See Chicago Mfg. & Distributing Co.

Danielson Tool Co., Fulton St., Wausau, Wis.

Detroit Garage Equipment Co., 406 E. Jefferson Ave., Detroit, Mich.

Fairbanks Co., New York, N. Y. (Sole Distributors for Hempy-Cooper Mfg. Co., Kansas City, Mo.) (See pages 137 to 140.)

Hanten Machine Co., Watertown, S. Dak.

Hempy-Cooper Mfg. Co.—See Fairbanks Co.

Honn, Peter, 629 Fairview Ave., Grand Rapids, Mich.

Railway Specialty Co., Atchison, Kans. "Rysco."

Rysco—See Railway Specialty Co.

Splash Oiler Co., 913 E. Washington St., Indianapolis, Ind.

Storm Mfg. Co., Dept. L., Minneapolis, Minn. (See page 983.)

Tribune Engineering Co., Front St., Owego, N. Y.

Universal Tool Co., 435 Woodward Ave., Detroit, Mich. "Utco." (See pages 984 and 985.)

Utco—See Universal Tool Co.

JIGS, Piston Aligning

American Engine & Airplane Co., 2869 W. Pico St., Los Angeles, Cal.

Continental Auto Parts Co., 1807 E. 17th St., Columbus, Ind. (See page 419.)

Littell Machinery Co., 532-34 Washington St., Spokane, Wash.

Peyer, John, 301 W. 68th St., New York, N. Y.

JIGS, Triple Gear Riveting for Fords

Miles Mfg. Co.—See Zinke Co.

Railway Specialty Co., Atchison, Kans. "Rysco."

Rysco—See Railway Specialty Co.

Wilson, K. R., 10-16 Lock St., Buffalo, N. Y. (See page 611.)

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Miles Mfg. Co., Newton, Ia.)

JOBBERS AND SUPPLY DEALERS

(Covering only Jobbers and Dealers in Automobile Supplies who advertise in this publication)

Auto Tire Sales Co., 1346-48 Michigan Ave., Chicago, Ill. (See page 143.)

Automotive Electrical Sales Co., 2637 S. Michigan Ave., Chicago, Ill. (See page 421.)

Beck & Corbitt, First, Ashley & O'Fallon Sts., St. Louis, Mo. (See page 629.)

Beckley-Ralston Co., Michigan Blvd. & 18th St., Chicago, Ill. (See page 61.)

Electric Appliance Co., Chicago, Ill. (See page 539.)

Motor Electrical Equipment Co., 1251 S. Michigan Ave., Chicago, Ill. (See page 673.)

National Auto Supply Co., 1601-03 Michigan Ave., Chicago, Ill. (See page 1141.)

New England Mills Co., 1027 W. Van Buren St., Chicago, Ill. (See page 143.)

Paul-Irving Co., 1194-96 Bushwick Ave., Brooklyn, N. Y. (See page 677.)

Pruden Hardware Co., W. E., 864-66 Eighth Ave., New York, N. Y. (See page 1121.)

Reinhard Bros. Co., 11-13 S. Ninth St., Minneapolis, Minn. (See page 659.)

Warshawsky & Co., 1915-31 S. State St., Chicago, Ill. (See page 697.)

Wyeth Hardware & Mfg. Co., St. Joseph, Mo. (See page 1147.)

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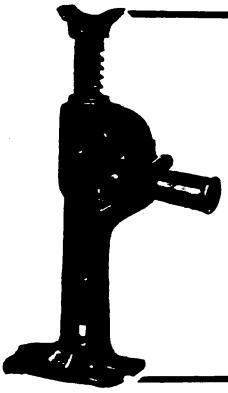

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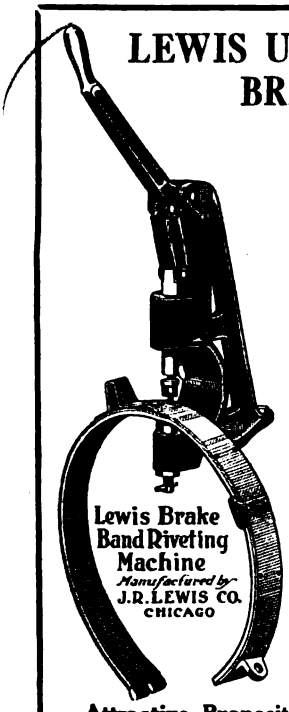
We build JACKS up to ten ton capacity.

Quality First

THE ASHLAND PRODUCTS COMPANY

50 E. Ninth St., Ashland, Ohio

LEWIS UNIVERSAL BRAKE BAND RIVETING MACHINE



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will save more than half the time in cutting out old rivets and replacing brake linings with split rivets. Rivets applied with this machine are well under the surface and will not score the brake drum. Any boy can do the job quickly.

Attractive Proposition to Jobbers
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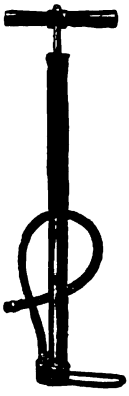

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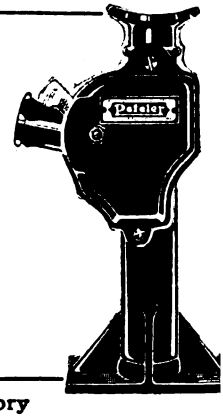
Auto Pumps & Jacks

A complete line at the right price with selling features that mean easy sales and satisfied customers.

Coe-Stapley Manufacturing Corporation

West Haven, Conn.



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JOINT BOOTS — See Boots, Steering Knuckle

JOINT DISCS—See Discs, Universal Joint

JOINTS, Ball

(For spark and throttle connections)

Birchwood Co., C. W., 718 Dellwood Ave., Jacksonville, Fla.

Chicago Screw Co., Homan Ave., & Fillmore St., Chicago, Ill. "Security." (See pages 837 and 841.)

Cincinnati Ball Crank Co., 90 North St., Cincinnati, O. (See page 333.)

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.

Greer, Frederic, 525 W. Van Buren St., Chicago, Ill.

Mechanical & Electrical Mfg. Co., 2227 Prairie Ave., Chicago, Ill. "Memco."

Memco—See Mechanical & Electrical Mfg. Co.

Morgan Mfg. Co., Court St., Keene, N. H. (See page 751.)

Peninsular Milled Screw Co., 6910 E. Lafayette St., Detroit, Mich.

Porter & Co., W. S., 141-43 W. Austin Ave., Chicago, Ill.

Security—See Chicago Screw Co.

Shaw Mfg. Co., 126 Massachusetts Ave., Boston, Mass. (See page 1133.)

Smith Mfg. Co., F. H., 3037-47 Carroll Ave., Chicago, Ill.

JOINTS, Speedometer Swivel

F. W. S.—See Stewart Mfg. Corp.

Meikle Mfg. Co., Springfield, Ill. "Springfield."

Ogden Mfg. Co., Plymouth, Ind.

Saco—See Speedometer Accessories.

Speedometer Accessories, Plymouth, Ind. "Saco."

Springfield—See Meikle Mfg. Co.

Springfield—See Staff, J. Wadsworth.

Staff, J. Wadsworth, 122 S. Michigan Ave., Chicago, Ill. (Dealers.) "Springfield." (See pages 1177 and 1193.)

Stewart Mfg. Corp., F. W., 345 W. Austin Ave., Chicago, Ill. "F. W. S."

JOINTS, Universal

(For complete drive shaft assemblies—See Shafts, Propeller; for Flexible Couplings—See Couplings, Flexible Shaft)

A. B.—See Easton Machine Co.

Adell Mfg. Co., Orange, Mass.

Alexander & Cox Co., 2358 Ogden Ave., Chicago, Ill.

Arvac Mfg. Co., Anderson, Ind. (See page 543.)

Automotive Products Co., Kresge Bldg., Detroit, Mich. (Sole Distributors for Peters Machine & Mfg. Co., Cleveland, O.)

BBB—See Blood-Bros. Machine Co.

Baker Gun & Forging Co., Batavia, N. Y. "Batavia." (See page 639.)

Batavia—See Baker Gun & Forging Co.

Baush Machine Tool Co., Springfield, Mass. (See page 513.)

Blood-Bros. Machine Co., Allegan, Mich. "BBB." (See page 543.)

C. A. S. Engineering Co., 4210 Woodward Ave., Detroit, Mich. (Sole Distributors for Mechanics Machine Co., Rockford, Ill. "S. A. F. E.")

Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 345.)

Cooper Flexible Transmission Co., Eighth Ave. & 18th St., Brooklyn, N. Y.

Detroit—See Universal Products Co.

Detroit Leather Works, 863 E. Lafayette Blvd., Detroit, Mich. (See page 125.)

Diebel, A. J., 976 Woodward Ave., Detroit, Mich. (Michigan, Indiana and Ohio Distributors for Ream Joints.) (See page 543.)

Easton Machine Co., Central St., South Easton, Mass. "A. B."

Hardy—See Thermoid Rubber Co.

Hartford Automotive Parts Co., Hartford, Conn. "K-B." (See pages 764 and 765.)

K. B.—See Hartford Automotive Parts Co.

Konigslow Mfg. Co., Otto E., 3501 Perkins Ave., Cleveland, O.

M. & E.—See Merchant & Evans Co.

Mechanics Machine Co.—See C. A. S. Engineering Co.

Merchant & Evans Co., 2035 Washington Ave., Philadelphia, Pa. "M. & E."

Mutual Machine Co., 25 Wells St., Hartford, Conn. "Warrens."

Norwalk Auto Parts Co., Norwalk, O.

Peters Machine & Mfg. Co.—See Automatic Products Co.

Pick Co., Carl, West Bend, Wis. (See page 1047.)

R-S Mfg. Co., Dayton, O. "Ream."

Ream—See R-S Mfg. Co.

Rockford Drilling Machine Co., ft. Catherine St., Rockford, Ill.

S. A. F. E.—See C. A. S. Engineering Co.

Shaw Mfg. Co., 126 Massachusetts Ave., Boston, Mass. (See page 1133.)

Snead & Co., Jersey City, N. J. (See page 609.)

Spicer Mfg. Corp., South Plainfield, N. J. (See page 541.)

Thermoid Rubber Co., Trenton, N. J. "Hardy." (See page 543.)

Universal Machine Co., Bowling Green, O. (See page 545.)

Universal Products Co., 458 E. Woodbridge St., Detroit, Mich. "Detroit."

Warrens—See Mutual Machine Co.

JUTE WEBBING—See Webbing, Jute and Cotton

KEROSENE ATTACHMENTS—See Carburetors, Kerosene; also Heaters, Mixture; also Manifolds, Intake, for Fords

KEROSENE BURNERS—See Burners, Gasoline and Kerosene

KEROSENE CARBURETORS — See Carburetors, Kerosene; also Heaters, Mixture; also Manifolds, Intake, for Fords

KEROSENE DEVICES—See Carburetors, Kerosene; also Heaters, Mixture; also Manifolds, Intake, for Fords

KEROSENE ENGINES—See Engines, Kerosene

KEROSENE FURNACES—See Torches, Kerosene

KEROSENE HEATERS—See Heaters, Mixture; also Manifolds, Intake for Fords

KEROSENE MANIFOLDS FOR FORDS—See Manifolds, Intake

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It would be easier to count the makes of cars and trucks that are not SPICER equipped, than to count those that are.

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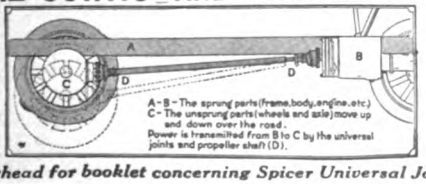

Write on your business letterhead for booklet concerning Spicer Universal Joints and Propeller Shafts

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KEROSENE MOTORS—See Engines, Motor Boat Kerosene

KEROSENE SYSTEMS—See Carburetors, Kerosene; also Heaters, Mixture; also Manifolds, Intake, for Fords

KEROSENE TORCHES — See Torches, Kerosene

KEYS, Acetylene Gas Tank

Buffum Tool Co., Louisiana, Mo. (See page 529.)

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.

Metal Stamping Co., 13th St., & East Ave., Long Island City, N. Y.

Mossberg Co., Frank, Attleboro, Mass.

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

Whitehouse Mfg. Co., 42 Elm St., Newark, N. J. (See page 637.)

KEYS, Machine

Leard Co., Wm., New Brighton, Pa. (See page 851.)

Moltrup Steel Products Co., Beaver Falls, Pa. (See page 919.)

National Steel Specialty Co., Buffalo, N. Y.

Pennsylvania Shafting Co., Spring City, Pa.

Standard Gauge Steel Co., Beaver Falls.

Whitney Mfg. Co., Hartford, Conn. (See page 231.)

KEYS, SPLIT—See Pins, Cotter

KEYS, Switch, for Fords

Bayne Mfg. Co., Bushnell, Ill. (See page 725.)

Handy-Dandy—See Relax Co.

Ideal Clamp Mfg. Co., 198-202 Bradford St., Brooklyn, N. Y. (See page 241.)

J & B Mfg. Co., Pittsfield, Mass. (See page 739.)

Relax Co., Norwood, O. "Handy-Dandy."

KEYS, TANK—See Keys, Acetylene Tank

KEYS, VALVE STEM, FOR FORDS—See Pins, Valve Stem

KITS, FIRST AID—See Cases, Medical Emergency

KITS, Tire Repair

(See also Cement, Tire; also Patches, Tire; also Plugs, Tire; also Sleeves, Tire)

General Tire & Rubber Co., East Market St., Akron, O.

Giant Tire & Rubber Co., Lima St. & Western Ave., Findlay, O. "M. & M."

Goodrich Co., B. F., S. Main St., Akron, O.

Goodyear Tire & Rubber Co., Akron, O. (See page 1015.)

Harlgrens Co., Erie, Pa. "Kant-Kum-Off."

International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind.

Kant-Kum-Off—See Harlgens Co.

M. & M.—See Giant Tire & Rubber Co.

Michelin Tire Co., Milltown, N. J.

Page-Lester Co., 2644 Indiana Ave., Chicago, Ill. "Tite-Wad."

Perma-Loc Mfg. Co., Wilkes-Barre, Pa. (See page 695.)

Pioneer Rubber Products Co., Michigan Ave. & Kansas St., St. Louis, Mo. "Ti-Re-Pair."

Spreckles-Savage Tire Co., Main & Sicard Sts., San Diego, Cal.

Sampson—See Stevens & Co.

Stevens & Co., 375 Broadway, New York, N. Y. "Sampson." (See page 1147.)

Swanson Supply Co., 2124 Westlake Ave., Seattle, Wash.

Ti-Re-Pair—See Pioneer Rubber Products Co.

Tite-Wad—See Page-Lester Co.

KITS, Tool

(For Tool Bags—See Bags, Tool)

Becco—See Michigan Motor Specialties Co.

Channon Co., H., 150 N. Market St., Chicago, Ill. "Rival."

Chicago Tool & Kit Mfg. Co., 12 N. Market St., Chicago, Ill.

Crescent Mfg. Co., 129 Reade St., New York, N. Y. (See page 1207.)

Cushman Co., Champaign, Ill. (See page 635.)

Diebel, A. J., 976 Woodward Ave., Detroit, Mich. (Michigan, Indiana and Ohio Distributors for Cushman Kits.) (See page 543.)

Fairmount Tool & Forging Co., 10611 Quincy Ave., Cleveland, O.

Herbrand Co., 109-25 E. State St., Fremont, O.

Mayhew Steel Products, 291 Broadway, New York, N. Y.

Michigan Motor Specialties Co., 120 Mt. Elliott Ave., Detroit, Mich. "Becco."

National—See Whitaker Mfg. Co.

Pomo—See Whitaker Mfg. Co.

Rival—See Channon Co.

Sterling—See Whitaker Mfg. Co.

Syracuse Wrench Co., 501 E. Water St., Syracuse, N. Y.

Vichek Tool Co., Cleveland, O.

Whitaker Mfg. Co., Chicago, Ill. "National," "Sterling," "Pomo." (See page 1177.)

KITS, Tool, for Fords

Chicago Tool & Kit Mfg. Co., 12 N. Market St., Chicago, Ill.

Corcoran Mfg. Co., Section & Foraker Aves., (Norwood), Cincinnati, O. "Peerless."

Peerless—See Corcoran Mfg. Co.

KNEE SHIELDS—See Shields, Motorcycle Knee

KNIVES, TIRE—See Knives, Tire Repair

KNIVES, Tire Repair

Hyde Mfg. Co., Eastford Rd., Southbridge, Mass.

Security Tool Works, 115-17 S. Clinton St., Chicago, Ill.

Sunbeam Mfg. Co., Polson Bldg., Seattle, Wash.

KNOCKOUT PUNCHES—See Punches, Center, Prick and Drift

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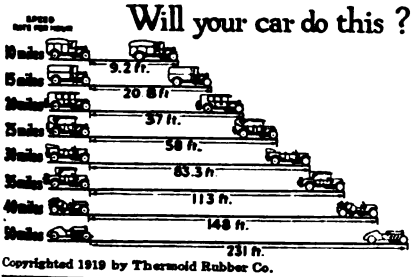

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KNUCKLE BOOTS—See Boots, Steering Knuckle

KNUCKLE CASES—See Boots, Steering Knuckle

KNUCKLES, STEERING—See Axles, Front; also Forgings

LACE, FABRIC—See Lacing, Fabric

LACE, LEATHER—See Leather, Rawhide Lace

LACE, WEBBING and CORD, Coach

(See also Trimmings, Cloth and Carpet)

Bridgeport Coach Lace Co., Bridgeport, Conn. (See page 167.)

Columbia—See Horstmann Co.

Horstmann Co., Wm. H., Fifth & Cherry Sts., Philadelphia, Pa. "Columbia."

Schlegel Mfg. Co., 277 N. Goodman St., Rochester, N. Y.

LACING, BELT—See Lacing, Fabric; also Leather, Rawhide Lace

LACING, BONNET—See Lacing, Fabric; also Leather, Rawhide Lace

LACING, Fabric Radiator

(For preventing motor hoods or bonnets from rattling)

American Mills Co., 39 W. 19th St., New York, N. Y. (See page 599.)

Bond Co., Charles, 520 Arch St., Philadelphia, Pa. "Fabritex."

Dafoe-Eustice Co., 4042 W. Jefferson Ave., Detroit, Mich. "Deco." "Ustus."

Deco—See Dafoe-Eustice Co.

Empire Weaving & Belting Corp., East Rochester, N. Y. "Tuftex."

Fabritex—See Bond Co.

Geisel Co., Otto E., 3200-06 Oxford St., Philadelphia, Pa.

Gilmer Co., L. H., Philadelphia, Pa. (See page 123.)

Hide Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind. (See page 121.)

Jaleau—See Uniform Hood Lace Co.

McElroy Belting & Hose Co., 276-300 Truman St., Hammond, Ind. "Rubberite."

Mikesell Bros. Co., 176-78 N. La Salle St., Chicago, Ill. (See page 297.)

Modern Belt & Web Co., Emerson Tower Bldg., Baltimore, Md.

Multibestos Co., Walpole, Mass. (See page 661.)

Powers Mfg. Co., Waterloo, Ia. (See page 593.)

Rubberite—See McElroy Belting & Hose Co.,

Smith Belting Co., Manning J., 39 E. Ashmead St. (Germantown), Philadelphia, Pa. (See page 121.)

Sutherland Co., F. L., 139 Beaubien St., Detroit, Mich. (See page 803.)

Tuftex—See Empire Weaving & Belting Corp.

Uniform Hood Lace Co., 1609 College Ave., Indianapolis, Ind. "Jaleau."

Ustus—See Dafoe-Eustice Co.

LACING, HOOD — See Lacing, Fabric Radiator; also Leather, Rawhide Lace

LACING, LEATHER RADIATOR — See Leather, Rawhide Lace

LACQUERS, CELLULOID—See Cleaners, Celluloid

LACQUERS, LAMP—See Enamels, Brass; also Lacquers, Metal

LACQUERS, Metal

American Lacquer Co., Bridgeport, Conn.

Barrett Varnish Co., 233 W. Lake St., Chicago, Ill.

Bulls Eye—See Zinsser & Co.

du Pont de Nemours & Co., E. I., Wilmington, Del. (See page 223.)

Egyptian Lacquer Mfg. Co., 23 Liberty St., New York, N. Y.

Hanson & Van Winkle Co., Newark, N. J.

Kalbfleisch Corp., 31 Union Sq., W., New York, N. Y. (See page 387.)

Maas & Waldstein Co., New York, N. Y.

Nikolas & Co., G. J., Chicago, Ill.

Van Schaack Bros. Chemical Works, 3353 Avondale Ave., Chicago, Ill.

Zinsser & Co., W., 195 William St., New York, N. Y. "Bulls-Eye."

LAG SCREWS—See Screws, Coach

LAMP ADAPTERS—See Adapters, Electric Lamp

LAMP BRACKETS—See Brackets, Side and Tail Lamp

LAMP BULB BOXES—See Cases, Extra Lamp Bulb

LAMP BULB CASES—See Cases, Extra Lamp Bulb

LAMP BULBS—See Lamps, Miniature Incandescent

LAMP BURNERS—See Burners, Acetylene Lamp

LAMP CONNECTORS—See Connectors, Electric Lamp; also Connectors, Acetylene Lamp; also Tubing, Soft Rubber

LAMP COVERS—See Covers, Lamp

LAMP DIMMERS—See Dimmers

LAMP ENAMELS—See Enamels, Lacquers and Finishes, Brass

LAMP GLASSES—See Glasses, Lamp

LAMP LACQUERS—See Enamels, Brass; also, Lacquers, Metal

LAMP LENSES—See Dimmers; also Glasses, Lamp

LAMP LIGHTERS—See Lighters, Acetylene Lamp

LAMP REFLECTORS — See Reflectors, Mirror

LAMP SOCKETS—See Sockets, Electric Lamp

LAMP TUBING—See Tubing, Soft Rubber

LAMP WICKS—See Wicks, Lamp

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ERO PRODUCTS

Instrument Dash Board for Fords

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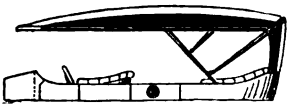
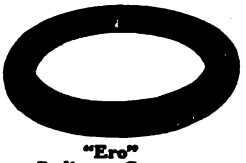
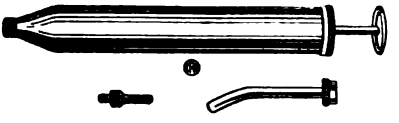


"Ero" Tire Covers



"Ero" Oil and Grease Gun

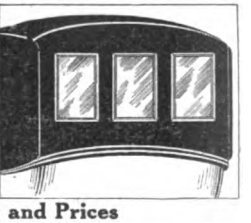


Back Cushion

"Ero" Radiator Covers

"Ero" Bucket Seats

"Ero" Aristocrat Glass Curtain Window



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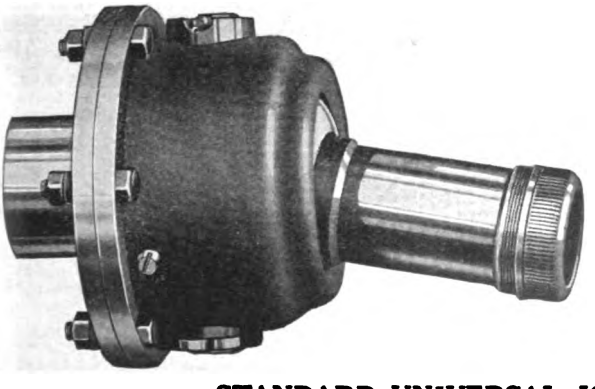

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LAMPS, Acetylene Head

Brown Mfg. Co., Jno. W., Columbus, O. (See page 547.)

Columbia—See Hine-Watt Mfg. Co.

Corcoran-Victor Co., 712 Reading Rd., Cincinnati, O. "Victor."

Dressel Railway Lamp Works, 3876 Park Ave., New York, N. Y.

E & J—See Edmunds & Jones Corp.

Edmunds & Jones Corp., 4440 Lawton Ave., Detroit, Mich. "E. & J."

Hall Lamp Co., C. M., Detroit, Mich. "Solar." (See page 493.)

Hine-Watt Mfg. Co., 180 N. Market St., Chicago, Ill. "Columbia."

Indiana Lamp Co., 20th St. & Milton Pike, Connersville, Ind. (See page 308.)

Neverout—See Rose Mfg. Co.

Rose Mfg. Co., 910 Arch St., Philadelphia, Pa. "Never-out." (See page 711.)

Solar—See Hall Lamp Co.

Superior Lamp Mfg. Co., 148-50 W. 52d St., New York, N. Y.

Victor—See Corcoran-Victor Co.

LAMPS, ACETYLENE MOTORCYCLE—See Lamps, Motorcycle Acetylene

LAMPS, ACETYLENE TRACTOR — See Headlights, Tractor Acetylene

LAMPS, DASH—See Lamps, Electric Dash

LAMPS, Electric Dash or Gage

Accessories Mfg. Co., 2311-29 N. Crawford Ave., Chicago, Ill.

Aid Mfg. Co., 2625-31 Stewart Ave., Chicago, Ill. "Amco." (See page 547.)

Amco—See Aid Mfg. Co.

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for "Presto" Lamps.) (See page 275.)

Brock Rubber Co., A. S., 100 Purchase St., Boston, Mass.

Brown Mfg. Co., Jno. W., Columbus, O. (See page 547.)

Chicago Electric Mfg. Co., 2817 S. Halsted St., Chicago, Ill. "Handy."

Columbus Auto Brass Co., Columbus, O. (See page 1139.)

Connecticut Telephone & Electric Co., Meriden, Conn.

Cowles & Co., C., New Haven, Conn. (See page 651.)

Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass.

Cuno Engineering Corp., 80 S. Vine St., Meriden, Conn.

Douglas & Rudd Mfg. Co., Bronson, Mich.

Edmunds & Jones Corp., 4440 Lawton Ave., Detroit, Mich.

Faw, J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributors for Culver-Stearns Lamps.) (See page 241.)

Guide Motor Lamp Mfg. Co., Madison Ave., Cleveland, O.

Handy—See Chicago Electric Mfg. Co.

Holmes, George L., 1733 Broadway, New York, N. Y. (Eastern Distributors for Cuno Lamps.) (See page 1187.)

Howe Lamp & Mfg. Co., 115-23 E. Ontario St., Chicago, Ill.

Liberty Works, Egg Harbor City, N. J. (See page 549.)

Loewus, Edwin H., 304 W. 54th St., New York, N. Y. (See page 1185.)

Manhattan Electrical Supply Co., 17 Park Pl., New York, N. Y.

Metal Specialties Mfg. Co., 328-53 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 547.)

Millwood-Brackett Co., 1601 Locust St., Des Moines, Iowa. (See page 1151.)

Morse, Frank W., 280 Congress St., Boston, Mass. (See page 549.)

Moswell Mfg. Co., 175 Grand St., New York, N. Y.

Motor Specialties Co., Waltham, Mass. "Tuway."

Murphy, H. J., Reading, Mass.

Parker-Wood Mfg. Co., 100 Purchase St., Boston, Mass.

Presto—See Metal Specialties Mfg. Co.

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco."

S-H—See Stuart-Howland Co.

Smith Mfg. Co., F. A., Rochester, N. Y. (See page 293.)

Stuart-Howland Co., 131-41 Federal St., Boston, Mass. "S-H."

Tuway—See Motor Specialties Co.

Vesta Battery Corp., 2100 Indiana Ave., Chicago, Ill.

Victor—See Corcoran-Victor Co.

LAMPS, ELECTRIC GAGE — See Lamps, Electric Dash

LAMPS, Electric Hand or Inspection

(Lamp and flexible cord for work around car)

Adams-Bagnall Electric Co., 7209 Platt St., Cleveland, O. "Auto-Eyes."

Aid Mfg. Co., 2625-31 Stewart Ave., Chicago, Ill. "Amco." (See page 547.)

Amco—See Aid Mfg. Co.

American Enamel Co., Neville St., Providence, R. I. "Britelite."

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for "Presto" Lamps.) (See page 275.)

Auto-Eyes—See Adams-Bagnall Electric Co.

Auto Specialty Co., 243 Bloomfield Ave., Passaic, N. J.

Britelite—See American Enamel Co.

Brock Rubber Co., A. S., 100 Purchase St., Boston, Mass.

Cellbeam Mfg. Co., 344 W. 57th St., New York, N. Y.

Chicago Electric Mfg. Co., 2817 S. Halsted St., Chicago, Ill. "Handy."

Connecticut Telephone & Electric Co., Meriden, Conn.

Cowles & Co., C., New Haven, Conn. (See page 651.)

Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass.

Cuno Engineering Corp., 80 S. Vine St., Meriden, Conn.

Dannenhirsch Co., 1905 W. Dauphin St., Philadelphia, Pa. "Danno."

Danno—See Dannenhirsch Co.

De Roy Accessories Co., 327 Main Ave. W., Spokane, Wash.

Douglas & Rudd Mfg. Co., Bronson, Mich.

Faw, J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributors for Culver-Stearns Lamps.) (See page 241.)

Guide Motor Lamp Mfg. Co., Madison Ave., Cleveland, O.

Handy—See Chicago Electric Mfg. Co.

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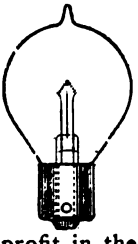

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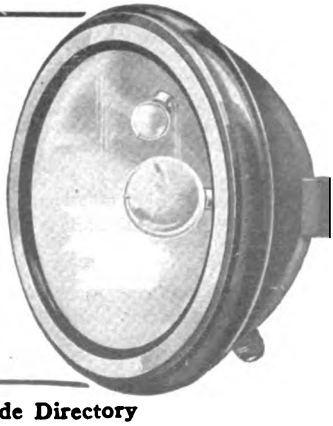

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LAMPS, Electric Hand or Inspection (Continued)

Harvard Electric Co., 525 W. Van Buren St., Chicago, Ill.

Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributor for Cuno Lamps.) (See page 1187.)

Hunt Trouble Light Co., Lima, O.

Loewus, Edwin H., 304 W. 54th St., New York, N. Y.) (See page 1185.)

Manhattan Electrical Supply Co., 17 Park Pl., New York, N. Y.

Metal Specialties Mfg. Co., 328-52 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 547.)

Morse, Frank W., 289 Congress St., Boston, Mass. (See page 549.)

Moswell Mfg. Co., 175 Grand St., New York, N. Y.

Niagara Searchlight Co., Eighth St. & Ferry Ave., Niagara Falls, N. Y.

Nitelite—See Providence Electric Mfg. Co.

Parker-Wood Mfg. Co., 900 Purchase St., Boston, Mass.

Premier Electric Co., 3800-10 Ravenswood Ave., Chicago, Ill. "Stickalite."

Presto—See Metal Specialties Mfg. Co.

Providence Electric Mfg. Co., 23 Broad St., Providence, R. I. "Nitelite."

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco."

S.-H.—See Stuart-Howland Co.

Smith Mfg. Co., F. A., Rochester, N. Y. (See page 293.)

Stickalite—See Premier Electric Co.

Stuart-Howland Co., 131-41 Federal St., Boston, Mass. "S-H."

Vesta Battery Corp., 2100 Indiana Ave., Chicago, Ill.

Zinke Co., 1323-25 Michigan Ave., Chicago Ill. (Sales Department for A. S. Brock Rubber Co., Boston, Mass.)

LAMPS, ELECTRIC HEAD—See Headlights, Electric

LAMPS, Electric Head, for Fords

American Auto Lamp Co., Union Hill, N. J. "Rialto." (See page 549.)

B. & L. Auto Lamp Co., 103-05 Mott St., New York, N. Y.

Cor-Co-Lite—See Corcoran Lamp Co.

Corcoran Lamp Co., Thomas J., 4900 Spring Grove Ave., Cincinnati, O. "Cor-Co-Lite."

Corcoran-Victor Co., 712 Reading Rd., Cincinnati, O. "Victor."

Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass.

Edmunds & Jones Corp., 4440 Lawton Ave., Detroit, Mich.

Faw, J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributors for Culver-Stearns Lamps.) (See page 241.)

Gray & Davis, Boston, Mass. (See page 911.)

Guide Motor Lamp Mfg. Co., Madison Ave., Cleveland, O.

Indiana Lamp Co., 20th St. & Milton Pike, Connersville, Ind. (See page 308.)

K-D Lamp Co., Cincinnati, O. (See page 493.)

Rialto—See American Auto Lamp Co.

Vesta Battery Corp., 2100 Indiana Ave., Chicago, Ill.

Victor—See Corcoran-Victor Co.

LAMPS, ELECTRIC INSPECTION — See Lamps, Electric Hand

LAMPS, ELECTRIC MOTORCYCLE—See Lamps, Motorcycle Electric

LAMPS, Electric Side and Tail

A-K—See Angsten-Kox Co.

Adams-Bagnall Electric Co., 7209 Platt St., Cleveland, O. "Auto-Eyes."

American Auto Lamp Co., Union Hill, N. J. "Yankee." (See page 549.)

Angsten-Kox Co., 221-23 W. Randolph St., Chicago, Ill. "A-K." (Tail lamps only.)

Auto-Eyes—See Adams-Bagnall Electric Co.

Auto Fender Safety Lamp Co., Corinth, N. Y.

Automatic Signal & Sign Co., 905 Rex Ave. N. E., Canton, O. "Dependable." (Tail lamps only.)

B. & L. Auto Lamp Co., 103-05 Mott St., New York, N. Y.

Boesch Lamp Co., 1135 Mission St., San Francisco, Cal.

Brown Mfg. Co., Jno. W., Columbus, O. (See page 547.)

Chicago Electric Mfg. Co., 2817 S. Halsted St., Chicago, Ill. "Handy."

Columbus Auto Brass Co., Columbus, O. "Pathfinder." (See page 1139.)

Corcoran-Victor Co., 712 Reading Rd., Cincinnati, O. "Victor."

Cowles & Co., C., New Haven, Conn. (See page 651.)

Dependable—See Automatic Signal & Sign Co.

Dressel Railway Lamp Works, 3876 Park Ave., New York, N. Y.

Edmunds & Jones Corp., 4440 Lawton Ave., Detroit, Mich.

Electric Auto-Lite Corp., Toledo, O.

English & Mersick Co., New Haven, Conn. (See pages 623 and 783.)

Gem Stamped Steel Co., 16 Beach St., Everett, Mass. (Tail lamps only.)

Gray & Davis, Boston, Mass. (See page 911.)

Guide Motor Lamp Mfg. Co., Madison Ave., Cleveland, O.

Hall Lamp Co., C. M., Detroit, Mich. "Solar." (See page 493.)

Hammer Co., E. A., 1339 Euclid Ave., Cleveland, O.

Handy—See Chicago Electric Mfg. Co.

Howe Lamp & Mfg. Co., 115-23 E. Ontario St., Chicago, Ill.

Indiana Lamp Co., 20th St. & Milton Pike, Connersville, Ind. (See page 308.)

K-D Lamp Co., Cincinnati, O. (See page 493.)

Kilborn-Sauer Co., Post Road, Fairfield, Conn.

Neverout—See Rose Mfg. Co.

Pathfinder—See Columbus Auto Brass Co.

Proos Mfg. Co., Grand Rapids, Mich. (See page 567.)

Rosco—See Rosen & Co.

Rose Mfg. Co., 910 Arch St., Philadelphia, Pa. "Never-out." (See page 711.)

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco."

S & M Lamp Co., 118 W. 36th Pl., Los Angeles, Cal.

Silvey Electric Co., 10-16 S. Canal St., Dayton, O.

Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) (See page 301.)

Solar—See Hall Lamp Co.

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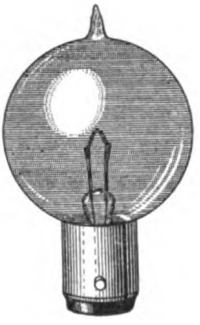

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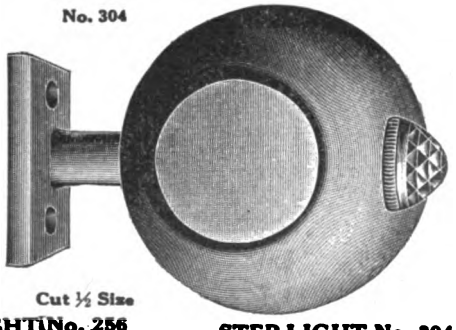

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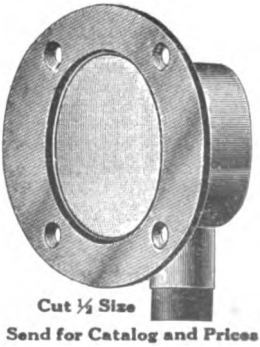

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Superior Lamp Mfg. Co., 148-50 W. 52d St., New York, N. Y.
Vesta Battery Corp., 2100 Indiana Ave., Chicago, Ill.
Victor—See Corcoran-Victor Co.
Warnola Mfg. Co., 73 Wooster St., New York, N. Y.
White Mfg. Co., 155 Cannon St., Bridgeport, Conn.
Yankee—See American Auto Lamp Co.

LAMPS, Electric Side and Tail, for Fords

A-K—See Angsten-Kox Co.
American Auto Lamp Co., Union Hill, N. J. "Rialto." (See page 549.)
Angsten-Kox Co., 221-23 W. Randolph St., Chicago, Ill. "A-K."
B. & L. Auto Lamp Co., 103-05 Mott St., New York, N. Y.
Brown Mfg. Co., Jno. W., Columbus, O. (See page 547.)
Columbus Auto Brass Co., Columbus, O. (See page 1139.)
Corcoran-Victor Co., 712 Reading Rd., Cincinnati, O. "Victor."
Culver-Stearns Mfg. Co., Detroit, Mich.
Edmunds & Jones Corp., 4440 Lawton Ave., Detroit, Mich.
Faw, J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributors for Culver-Stearns Lamps.) (See page 241.)
Guide Motor Lamp Mfg. Co., Madison Ave., Cleveland, O.
Howe Lamp & Mfg. Co., 115-23 E. Ontario St., Chicago, Ill.
Indiana Lamp Co., 20th St. & Milton Pike, Connersville, Ind. (See page 308.)
K-D Lamp Co., Cincinnati, O. (See page 493.)
Kilborn-Sauer Co., Post Road, Fairfield, Conn.
Neverout—See Rose Mfg. Co.
Rialto—See American Auto Lamp Co.
Rose Mfg. Co., 910 Arch St., Philadelphia, Pa. "Never-out." (See page 711.)
Smith Mfg. Co., F. A., Rochester, N. Y. (See page 293.)
Superior Lamp Mfg. Co., 148-50 W. 52d St., New York, N. Y.
Victor—See Corcoran-Victor Co.

LAMPS, Electric Speedometer, for Fords

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for "Presto" Lamps.) (See page 275.)
Bull Pup—See Metal Specialties Mfg. Co.
Bull Terrier—See Metal Specialties Mfg. Co.
Metal Specialties Mfg. Co., 338-52 N. Kedzie Ave., Chicago, Ill. "Bull Pup," "Bull Terrier," "Presto." (See page 547.)
Presto—See Metal Specialties Mfg. Co.

LAMPS, ELECTRIC TAIL—See Lamps, Electric Side and Tail

LAMPS, GAGE—See Lamps, Electric Dash or Gage

LAMPS, HAND—See Lamps, Electric Hand

LAMPS, INSPECTION—See Lamps, Electric, Hand or Inspection

LAMPS or BULBS, Miniature Incandescent

Advance Lamp Works, 351-61 W. Superior St., Chicago, Ill. "Triangle."
American Ever Ready Works of National Carbon Co., 303 Thompson Ave., Long Island City, N. Y. "Everready."
Banner Electric Division of National Lamp Works, Youngstown, O.
Brilliant Electric Division of National Lamp Works, 4503 Hough Ave., Cleveland, O.
Bryan-Marsh Division of National Lamp Works, 623-33 S. Wabash Ave., Chicago, Ill.
Buckeye Electric Division of National Lamp Works, 46th & Perkins Ave., Cleveland, O.
Bryan-Marsh Division of National Lamp Works, 623-33 S. Wabash Ave., Chicago, Ill.
Colonial Electric Division of National Lamp Works, Warren, O.
Columbia Lamp Division of National Lamp Works, 706 Chestnut St., St. Louis, Mo.
Continental Electric Lamp Co., 1438 Bryan Pl., Chicago, Ill.
Davis Tungsten Lamp Co.—See U. S. Automobile & Electrical Accessories Co.
Domestic Tungsten Lamp Co., 418 Tenth St., West New York, N. J.
Edison Lamp Works of General Electric Co., Sussex St., Harrison, N. J.
Eveready—See American Ever Ready Works
Faw, J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributors for "Tungsol" Lamps.) (See page 241.)
Federal Miniature Lamp Division, National Lamp Works of General Electric Co., 926 S. Michigan Ave., Chicago, Ill. (See page 551.)
Federal Miniature Lamp Division, National Lamp Works of General Electric Co., 6 E. 39th St., New York, N. Y. (See page 547.)
Fostoria Lamp Division of National Lamp Works, Fostoria, O.
General Lamp Division of National Lamp Works, Cleveland, O.
International Incandescent Lamp Works, Bergenline & Franklin Sts., Union Hill, N. J. "Ora." (See page 567.)
Jaeger Co., H. J., Shippin St. & Park Ave., Weehawken, N. J.
Mac Kno Glare—See Premier Incandescent Lamp Works.
Mannweiler Co., A. C., 1413-15 Calhoun St., Fort Wayne, Ind.
Miniature Incandescent Lamp Corp., 95 Eighth Ave., Newark, N. J. "Tungsol."
National Lamp Works of General Electric Co., 106 Nela Park, Cleveland, O.
Nitros—See Jaeger Co.
Ora—See International Incandescent Lamp Works.
Packard Lamp Division of National Lamp Works, Warren, O.
Premier Incandescent Lamp Works, 222 Washington St., Hoboken, N. J. "Mac Kno Glare."
Shelby Lamp Division of General Electric Co., Shelby, O.
Sterling Electric Lamp Division of National Lamp Works, Warren, O.
Sunbeam Lamp Division of National Lamp Works of General Electric Co., 500 S. Clinton St., Chicago, Ill.
Triangle—See Advance Lamp Works.

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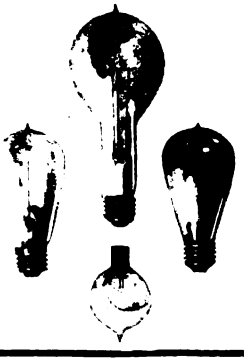

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Tungsol—See Faw, J. H.

United States Automobile & Electrical Accessories Co., 208 W. 59th St., New York, N. Y. (Sole Distributors for Davis Tungsten Lamp Co., Guttenberg, N. J.)

U. S. Incandescent Lamp Co., Laclede Bldg., St. Louis, Mo.

Universal Electric Lamp Co., 843 Broad St., Newark, N. J. (See page 551.)

Weehawken Tungsten Lamp Co., 340 Hudson Ave., West Hoboken, N. J.

Westinghouse Lamp Co., 165 Broadway, New York, N. Y.

Westinghouse-McCandless Co., 406 W. 31st St., New York, N. Y.

LAMPS, Motorcycle Acetylene

Hall Lamp Co., C. M., Detroit, Mich. "Solar." (See page 493.)

Solar—See Hall Lamp Co.

Superior Lamp Mfg. Co., 148-50 W. 52d St., New York, N. Y.

LAMPS, Motorcycle Electric

Hall Lamp Co., C. M., Detroit, Mich. "Solar." (See page 493.)

Indiana Lamp Co.—See Zinke Co.

Smith Mfg. Co., F. A., Rochester, N. Y. (See page 293.)

Solar—See Hall Lamp Co.

Superior Lamp Mfg. Co., 148-50 W. 52d St., New York, N. Y.

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Indiana Lamp Co., Connersville, Ind.) (See page 308.)

LAMPS, Motorcycle Oil

Indiana Lamp Co.—See Zinke Co.

Neverout—See Rose Mfg. Co.

Rose Mfg. Co., 910 Arch St., Philadelphia, Pa. "Never-out." (See page 711.)

Smith Mfg. Co., F. A., Rochester, N. Y. (See page 293.)

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Indiana Lamp Co., Connersville, Ind.) (See page 308.)

LAMPS, OIL MOTORCYCLE—See Lamps, Motorcycle Oil

LAMPS, Oil, Side and Tail

Adams & Westlake Co., Chicago, Ill. "Adlake." (See page 551.)

Adlake—See Adams & Westlake Co.

American Auto Lamp Co., Union Hill, N. J. "Yankee." (See page 549.)

B. & L. Auto Lamp Co., 103-05 Mott St., New York, N. Y.

Boesch Lamp Co., 1135 Mission St., San Francisco, Cal.

Brown Mfg. Co., Jno. W., Columbus, O. (See page 547.)

Champion—See Dietz Co.

Convoy—See Dietz Co.

Corcoran-Victor Co., 712 Reading Rd., Cincinnati, O. "Victor."

Dainty—See Dietz Co.

Dietz Co., R. E., 60 Laight St., New York, N. Y. "Dainty," "Royal," "Champion," "Royal Junior," "Iron-Clad," "Monitor," "Pilot," "Convoy." (See page 553.)

Dressel Railway Lamp Works, 3876 Park Ave., New York, N. Y.

E & J—See Edmunds & Jones Corp.

Edmunds & Jones Corp., 4440 Lawton Ave., Detroit, Mich. "E. & J."

Gray & Davis, Boston, Mass. (See page 911.)

Hall Lamp Co., C. M., Detroit, Mich. (See page 493.)

Indiana Lamp Co.—See Zinke Co.

Iron-Clad—See Dietz Co.

Monitor—See Dietz Co.

Neverout—See Rose Mfg. Co.

Pilot—See Dietz Co.

Rose Mfg. Co., 910 Arch St., Philadelphia, Pa. "Never-out." (See page 711.)

Royal—See Dietz Co.

Royal Junior—See Dietz Co.

Solar—See Hall Lamp Co.

Superior Lamp Mfg. Co., 148-50 W. 52d St., New York, N. Y.

Victor—See Corcoran-Victor Co.

Yankee—See American Auto Lamp Co.

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Indiana Lamp Co., Connersville, Ind.) (See page 308.)

LAMPS, OIL TRACTOR—See Lamps, Tractor Oil

LAMPS, REEL—See Lamps, Electric Hand; also Lights, Spot

LAMPS, SIDE—See Lamps, Electric Side and Tail; also Lamps, Oil

LAMPS, SPEEDOMETER, FOR FORDS—See Lamps, Electric Speedometer

LAMPS, SPEEDOMETER—See Lamps, Electric Dash

LAMPS, SPOT—See Lights, Spot

LAMPS, SWIVEL—See Lights, Spot

LAMPS, TAIL—See Lamps, Electric Side; also Lamps, Oil, Side and Tail

LAMPS, TRACTOR ACETYLENE—See Headlights, Tractor Acetylene

LAMPS, TRACTOR ELECTRIC — See Headlights, Tractor Electric

LAMPS, Tractor Oil

Adams & Westlake Co., Chicago, Ill. (See page 551.)

LAMPS, TUNGSTEN—See Lamps, Miniature Incandescent

LAMPS OR HEADLIGHTS, ELECTRIC—See Headlights, Electric

LANDING GEARS, AIRPLANE — See Gears, Airplane Landing

LANTERNS, HAND—See Lights, Electric Flash

LAP ROBES—See Robes

LAPPING MACHINES—See Machines, Lapping

LATCHES, EMERGENCY BRAKE, FOR FORDS—See Handles, Emergency Brake

LATCHES, HOOD—See Fasteners, Hood

LATHE CHUCKS—See Chucks, Lathe

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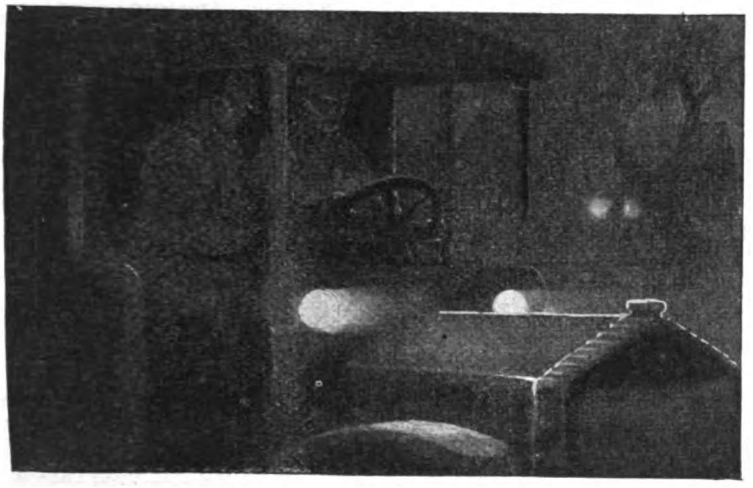

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LATHE CYLINDER GRINDING ATTACHMENTS—See Attachments, Lathe Cylinder Grinding

LATHE DOGS—See Dogs, Lathe

LATHE MILLING ATTACHMENTS—See Attachments, Lathe Milling

LATHE TOOL HOLDERS—See Holders, Lathe and Planer Tool

LATHE TOOLS—See Tools, Lathe

LATHES, Airplane Strut

Fay & Egan Co., J. A., 415 W. Front St., Cincinnati, O.

LATHES, Aircraft Propeller Turning

Defiance Machine Works, 484 Perry St., Defiance, O.

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Ames Co., B. C., Ames St., Waltham, Mass.
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Elgin Tool Works, 61-69 N. State St., Elgin, Ill.
Goodell-Pratt Co., Greenfield, Mass.
Hardinge Bros., 1770 Berteau Ave., Chicago, Ill. "Cataract."
National Premier Machine Tool Co., 1512 Lakeside Ave., Cleveland, O.
Potter Tool & Machine Works, S. A., 69 E. 130th St., New York, N. Y.
Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 339.)
Remington Tool & Machine Co., 88 Broad St., Boston, Mass.
Rivett Lathe & Grinder Co., 20 Riverview Rd. (Brighton), Boston, Mass.
Shepard Lathe Co., Canal & Jackson Sts., Cincinnati, O.
Sloan & Chace Mfg. Co., 351 Sixth Ave., Newark, N. J.
South Bend Lathe Works, 425 E. Madison St., South Bend, Ind. (See page 557.)
Stark Tool Co., 218 Moody St., Waltham, Mass.
Van Norman Machine Tool Co., 160 Wilbraham Ave., Springfield, Mass.
Wade-American Tool Co., 49-59 River St., Waltham, Mass.
Waltham Machine Works, Newton & Cutter Sts., Waltham, Mass.

LATHES, Crank Pin

American Tool Works Co., Pearl St. & Eggleston Ave., Cincinnati, O.
Lodge & Shipley Machine Tool Co., 3055 Colerain Ave., Cincinnati, O.
Tindell-Morris Co., Eddystone, Pa
Wickes Bros., 2501 Water St., Saginaw, Mich.

LATHES, Engine

American Tool Works Co., Pearl St. & Eggleston Ave., Cincinnati, O.
Barker & Co., Wm., Pleasant & Wheeler Sts., Covington, Ky.
Barnes Co., W. F. & John, 301 S. Water St., Rockford, Ill.
Barnes Drill Co., 314-20 Chestnut St., Rockford, Ill.
Betts Machine Co., Rochester, N. Y.
Boggs Co., T. Tyler, Abbott Bldg., Philadelphia, Pa. "Landis."
Boye & Emmes Machine Tool Co., 2245-51 Spring Grove Ave., Cincinnati, O.
Bradford Machine Tool Co., 657 Evans St., Cincinnati, O.
Bridgeford Machine Tool Works, 177 Winton Rd., Rochester, N. Y.
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Carroll-Jamieson Machine Tool Co., Davis Road, Batavia, O.
Champion Tool Works, 4955 Spring Grove Ave., Cincinnati, O.
Chord Lathe Co., Ninth St. & New York, Ave., Newcastle, Ind.
Cincinnati Lathe & Tool Co., 3207-11 North St. (Oakley), Cincinnati, O. "Cintilathe."
Cintilathe—See Cincinnati Lathe & Tool Co.
Cisco Machine Tool Co., Elmore & C. H. & D. Ry., Cincinnati, O.
Conradson Machine Tool Co.—See Ryerson & Son.
Dalton Mfg. Corp., Sound Beach, Conn.
Davis Machine Tool Co., 307 St. Paul St., Rochester, N. Y.
Economy—See Rockford Lathe & Drill Co.
Fay—See Jones & Lamson Machine Co.
Fay & Scott, Dexter, Me.
Fay Machine Tool Co., Philadelphia, Pa.
Filsmith—See Smith Mfg. Co.
Fitchburg Machine Works, 64 Main St., Fitchburg, Mass. "Lo-swing."
Flather Mfg. Co., E. J., 46 Spring St., Nashua, N. H.
Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.
Greaves-Klusman Tool Co., Cincinnati, O.
Hamilton Machine Tool Co., Hamilton, O.
Hendey Machine Co., 105 Summer St., Torrington, Conn.
Jones & Lamson Machine Co., Springfield, Vt. "Fay."
Landis—See Boggs Co.
Le Blond Machine Tool Co., R. K., Madison & Edwards Rds., Cincinnati, O.
Lo-swing—See Fitchburg Machine Works.
Lodge & Shipley Machine Tool Co., 3055 Colerain Ave., Cincinnati, O.
Monarch Machine Tool Co., 102 Oak St., Sidney, O.
Morris Machine Tool Co., Court & Harriet Sts., Cincinnati, O.
Mueller Machine Tool Co., 2425-29 Colerain Ave., Cincinnati, O.
Mulliner—See Porter-Cable Machine Co.
Myers Machine Tool Co., Second & Chestnut Sts., Columbia, Pa.
National Lathe Co., 11-15 W. Second St., Cincinnati, O.
New Haven Mfg. Co., 50 Whitney Ave., New Haven, Conn.
Niles-Bement-Pond Co., 111 Broadway, New York, N. Y. "Pond."
Oliver Machinery Co., 1025 Clancy St. N. E., Grand Rapids, Mich.
Pond—See Niles-Bement-Pond Co.
Porter-Cable Machine Co., 1708 N. Salina St., Syracuse, N. Y. "Mulliner."

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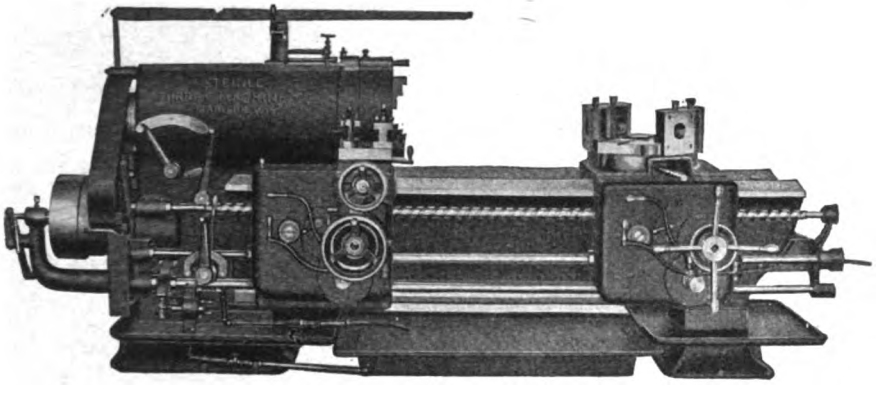

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MADISON, WISCONSIN

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Putnam Machine Co., Newton Pl., Fitchburg, Mass.

Rahn-Larmon Co., 2941 Spring Grove Ave., Cincinnati, O.

Reed-Prentice Co., 53 Franklin St., Boston, Mass.

Robbins Machine Co., 42 Lagrange St., Worcester, Mass.

Rockford Lathe & Drill Co., 1827 14th Ave., Rockford, Ill. "Economy."

Rockford Tool Co., 2410 11th St., Rockford, Ill.

Ryerson & Son, Joseph T., Chicago, Ill. (Sole Distributors for Conradson Machine Tool Co., Green Bay, Wis.)

Sebastian Lathe Co., Cincinnati, O.

Seneca Falls Mfg. Co., 887 Falls St., Seneca Falls, N. Y. "Star."

Shepard Lathe Co., Canal & Jackson Sts., Cincinnati, O.

Sidney Machine Tool Co., Sidney, O.

Smith Mfg. Co., Philip, Sidney, O. "Filsmith."

South Bend Lathe Works, 425 E. Madison St., South Bend, Ind. (See page 557.)

Springfield Machine Tool Co., Southern Ave. & P. C. & St. L. R. R., Springfield, O.

Stapf & Co., John B., Dunkirk, N. Y.

Star—See Seneca Falls Mfg. Co.

Walcott Lathe Co., 111-13 Calhoun St., Jackson, Mich.

Whitcomb-Blaisdell Machine Tool Co., 53 Franklin St., Boston, Mass.

Wickes Bros., 2501 Water St., Saginaw, Mich.

Willard Machine & Tool Co., Third St. & Madison Ave., Cincinnati, O.

LATHES, Forming

Meriden Machine Tool Co., 100 Britannia St., Meriden, Conn.

LATHES, PATTERN MAKERS — See Lathes, Woodworking

LATHES, PRECISION—See Lathes, Bench or Precision

LATHES, PROPELLER TURNING — See Lathes, Aircraft Propeller Turning

LATHES, STRUT—See Lathes, Airplane Strut

LATHES, Turret

Acme Machine Tool Co., 4955 Spring Grove Ave., Cincinnati, O.

American Tool Works Co., Pearl St. & Eggleston Ave, Cincinnati, O.

American Tool & Machine Co., 10 High St., Boston, Mass.

Bardons & Oliver, 1133 W. Ninth St., Cleveland, O.

Bradford Machine Tool Co., 657 Evans St., Cincinnati, O.

Bullard Machine Tool Co., Broad St. & Railroad Ave., Bridgeport, Conn. Cincinnati, O.

Champion Tool Works, 4955 Spring Grove Ave..

Conradson Machine Tool Co.—See Ryerson & Son.

Davis Machine Tool Co., 307 St. Paul St., Rochester, N. Y.

Dreses Machine Tool Co., 227-39 W. McMicken Ave., Cincinnati, O.

Fay & Scott, Dexter, Me.

Federal Machine Co., 1602-18 S. Lafayette St., South Bend, Ind.

Fulton Machine Tool Co., 1422 Fulton St., Chicago, Ill.

Garvin Machine Co., Spring & Varick Sts., New York, N. Y.

Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.

Greenfield Tap & Die Corp., Greenfield, Mass. (See page 927.)

Greenlee Bros. & Co., 2100-2400 12th St., Rockford, Ill.

Hamilton Machine Tool Co., Hamilton, O.

Hartness—See Jones & Lamson Machine Co.

Inman Co., H. A., Newark, N. Y.

International Machine Tool Co., 1124 W. 21st St., Indianapolis, Ind. "Libby."

Jones & Lamson Machine Co., Springfield, Vt. "Hartness."

Le Blond Machine Tool Co., R. K., Madison & Edwards Rds., Cincinnati, O.

Libby—See International Machine Tool Co.

Lodge & Shipley Machine Tool Co., 3055 Colerain Ave., Cincinnati, O.

Meriden Machine Tool Co., 100 Britannia St., Meriden, Conn.

Millholland Machine Co., W. 23rd & Belt R. R., Indianapolis, Ind.

Monarch Machine Tool Co., 102 Oak St., Sidney, O.

New Britain Machine Co., Chestnut St., New Britain, Conn.

Potter & Johnston Machine Co., 1035 Newport Ave., Pawtucket, R. I.

Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 339.)

Rahn-Larmon Co., 2941 Spring Grove Ave., Cincinnati, O.

Reed-Prentice Co., 53 Franklin St., Boston, Mass.

Rivett Lathe & Grinder Co., 20 Riverview Rd., (Brighton), Boston, Mass.

Ryerson & Son, Joseph T., Chicago, Ill. (Sole Distributors for Conradson Machine Tool Co., Green Bay, Wis.)

Smurr & Kamen Co., 328 N. Albany Ave., Chicago, Ill.

Southworth Machine Co., Portland, Me.

Steinle Turret Machine Co., Madison, Wis. (See page 555.)

Warner & Swasey Co., 5701 Carnegie Ave., Cleveland, O.

Wood Turret Machine Co., S. Alabama St., Brazil, Ind.

LATHES, Woodworking

American Saw Mill Machinery Co., Hackettstown, N. J.

American Wood Working Machinery Co., 591 Lyell Ave., Rochester, N. Y.

Cordesman-Rechtin Co., 215 Butler St., Cincinnati, O.

Defiance Machine Works, 484 Perry St., Defiance, O.

Fay & Egan Co., J. A., 415 W. Front St., Cincinnati, O.

Fay & Scott, Dexter, Me.

Ober Mfg. Co., Chagrin Falls, O.

Oliver Machinery Co., 1025 Clancy St. N. E., Grand Rapids, Mich.

Porter Machinery Co., C. O., 606 Front Ave. N. W., Grand Rapids, Mich.

Power & Co., L., 20 S. 23d St., Philadelphia, Pa.

Robbins Machine Co., 42 Lagrange St., Worcester, Mass.

Smith Machine Co., H. B., Smithville, N. J.

LEAD BURNERS—See Burners, Lead

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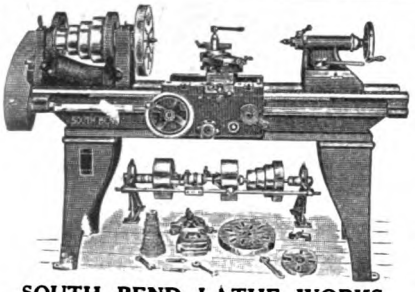

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For the Machine and Automobile Repair Shop

Straight or Gap Beds

11"x4'	Lathe	$285.00
13"x5'	Lathe	380.00
15"x6'	Lathe	470.00
16"x8'	Lathe	565.00

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Price Includes Equipment as Shown in Illustration

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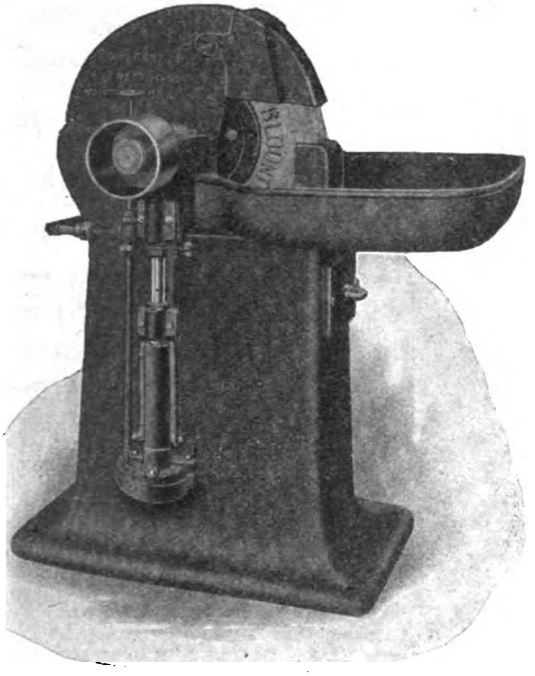

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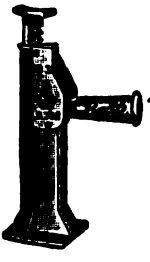

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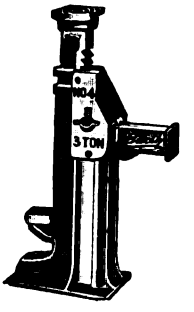

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LEAD BURNING MACHINES — See Machines, Lead Burning

LEAD MOLDS—See Molds, Lead

LEAF SPRING STRAIGHTENING MACHINES—See Machines, Leaf Spring Straightening

LEAF SPRINGS—See Springs, Leaf

LEATHER, Artificial or Imitation

(For upholstery and tops; for genuine leather—See Leather, Natural)

Athol Mfg. Co., 505 Fifth Ave., New York, N. Y. (See page 559.)

Barrell Co. of New York, Wm. L., New York, N. Y. "Wilbaco." (See page 561.)

Blue Robin—See Lawrence & Co.

Boston Woven Hose & Rubber Co., Cambridge, Mass. "Synthide."

Broncho—See Zapon Leather Cloth Co.

Bull Dog—See Mutty Co.

Charoleen—See Reilly & Son.

Chase & Co., L. C., Boston, Mass. "Leatherwove." (See page 997.)

Chicago Decorative Leather Co., 426 S. Clinton St., Chicago, Ill. "Elkide."

Cotex Co., 341 Oliver St., Newark, N. J.

Dridek—See Mutty Co.

Duncan Co., W. H., 70-72 Worth St., New York, N. Y.

du Pont de Nemours & Co. (Fabrikoid Div.), Wilmington, Del. "Fabrikoid," "Rayntite."

Dura Leather—See Sloane, W. & J.

Duratex Co., Newark, N. J.

Duxrane—See O'Bannon Corp.

Elkide—See Chicago Decorative Leather Co.

Edelstone Fabric Co., Wm. W., 25 Thorndike St., Cambridge, Mass. (Dealers.) (See page 563.)

Endura Mfg. Co., 6317 Eastwick Ave., Philadelphia, Pa. "Enduralite."

Enduralite—See Endura Mfg. Co.

Fabrikoid—See du Pont de Nemours & Co.

Bank Bldg., Philadelphia, Pa. "Hyde-Tex."

Haskelite Mfg. Corp., 133 W. Washington St., Chicago, Ill.

Keratol Co., South & Van Buren Sts., Newark, N. J.

Lawrence & Co., 24 Thomas St., New York, N. Y. (Sole Distributors for Merrimack Mfg. Co., Lowell, Mass.) "Blue Robin."

Leatherlike Co., Oakman Blvd. & Detroit Terminal R.R., Detroit, Mich.

Leatherwove—See Chase & Co.

Masland Duraleather Co.—See Sloane, W. & J.

Merrimack Mfg. Co.—See Lawrence & Co.

Midland Fabrics Co., 228 W. 58th St., New York, N. Y. (Distributors.) (See page 935.)

Moroccoline—See Zapon Leather Cloth Co.

Muleskin—See Zapon Leather Cloth Co.

Mustang—See Zapon Leather Cloth Co.

Mutty Co., L. J., 175 Congress St., Boston, Mass. "Bull Dog," "Dridek."

Newark Rubber Co., Schley St., Garfield, N. J.

Nonleek—See O'Bannon Corp.

O'Bannon Corp., 200 Fifth Ave., New York, N. Y. "Nonleek," "Duxrane." (See page 253.)

Pantasote Co., 11 Broadway, New York, N. Y.

Randco—See Zapon Leather Cloth Co.

Rayntite—See du Pont de Nemours & Co.

Reilly & Son, P., Mott St. & Passaic Ave., Newark, N. J. "Charoleen."

Scherer & Co., H., 440 E. Jefferson Ave., Detroit, Mich.

Sloane, W. & J., 575 Fifth Ave., New York, N. Y. (Sole Distributors for Masland Duraleather Co., Philadelphia, Pa.) "Duraleather." (See page 561.)

Strong Textile Co., 245 W. 55th St., New York, N. Y. (See page 251.)

Super-Glos Mfg. Co., 1091 Mission St., San Francisco, Cal.

Synthide—See Boston Woven Hose & Rubber Co.

Taylor Co., H. D., 99-115 Oak St., Buffalo, N. Y.

Textileather Co., 212 Fifth Ave., New York, N. Y.

Wilbaco—See Barrell Co. of New York.

Zapon Leather Cloth Co., 200 Fifth Ave., New York, N. Y. "Moroccoline." "Broncho," "Muleskin," "Randco," "Mustang." (See page 355.)

LEATHER BELTING—See Belting, Leather

LEATHER COATS—See Clothing, Motorists'

LEATHER DOOR PROTECTORS — See Protectors, Door

LEATHER DRESSING — See Dressing, Leather

LEATHER FAN BELTS—See Belts

LEATHER, Friction

(For lining brakes and clutches—See also Belting, Leather)

Automotive Leather Products Co., Park Ave. & 130th St., New York, N. Y.

Boston Leather Specialties, 30 Merrimac St., Boston, Mass.

Chicago Rawhide Mfg. Co., 1301 Elston Ave., Chicago, Ill.

Coe & Brown, 204 George St., New Haven, Conn.

Deford Co., 729 Atlantic Ave., Boston, Mass.

Detroit Clutch Cover Co., 17 Woodward Ave., Detroit, Mich.

Duckwall Belting & Hose Co., 201-05 N. West St., Indianapolis, Ind. (See page 637.)

Evans-Laurie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for "G. & K." Leather.) (See page 125.)

Excelmo—See Missouri Belting Co.

G & K—See Graton & Knight Mfg. Co.

Graton & Knight Mfg. Co., Worcester, Mass. "G. & K." (See page 119.)

Hide Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind. "Wetprufe," "Leathertex." (See page 121.)

Houghton & Co., E. F., 240 W. Somerset St., Philadelphia, Pa. "Vim."

Hudson Belting Co., 1-8 Eaton Pl., Worcester, Mass.

Hunt Co., Henry C., 261 Franklin St., Boston, Mass. (See page 117.)

Jewell Belting Co., 55 Trumbull St., Hartford, Conn.

Leathertex—See Hide, Leather & Belting Co.

M. L. B.—See Milwaukee Leather Belting Co.

Milwaukee Leather Belting Co., 146 W. Water St., Milwaukee, Wis. "M. L. B."

Missouri Belting Co., 1021-29 S. Grand Ave., St. Louis, Mo. "Excelmo."

National Leather Belt Co., 342 E. 38th St., New York, N. Y.

National Leather Co., 161 South St., Boston, Mass.

Page Belting Co., Concord, N. H.

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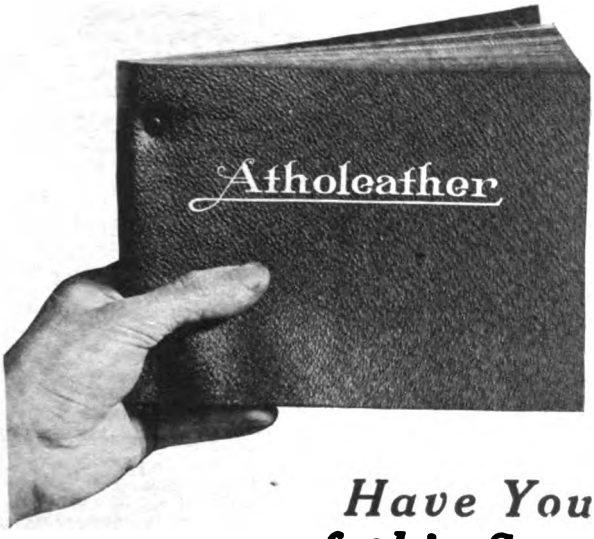
A Word to the Man who Buys Upholstery Materials

Atholeather is the material you have been wishing someone would put on the market.

It is a material that combines every quality essential to superior upholstery. Soft and pliable, yet tough and wear-resisting—Atholeather will last during the life of the car.

Atholeather will not crack or peel.



Atholeather can be kept clean by washing with soap and water.

Manufacturers who buy Atholeather are buying for the future as well as for the present, because Atholeather will retain its fine appearance during the life of the car.

Atholeather is also made in weights suitable for panel board coverings and gimp bindings.

If you want your panel board coverings and gimp bindings to be in keeping with your upholstery be sure and specify Atholeather.

Have You a Copy of this Sample Book?

We want every car manufacturer and trim shop to have a copy of this book.

Write us today on your letterhead and we will send it to you.

Atholeather is a superior upholstery material.

We want to send you our sample book so that you can examine it yourself. A careful inspection will show you that Atholeather is soft and pliable yet strong and durable.

Atholeather is sun and waterproof and will not fade.

Atholeather is also made in a wide range of colors. There is a grade and color of Atholeather suitable for use on any type of car.

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LEATHER, Friction (Continued)

Providence Belting Co., 25 Charles St., Providence, R. I.
Rahmann & Co., Geo., 31 Spruce St., New York, N. Y.
Raniville Co., F., 241-49 Pearl St., Grand Rapids, Mich.
Rhoads & Sons, J. E., 12 N. Third St., Philadelphia, Pa.
Rose Mfg. Co., Frank, Hastings, Neb. (See page 751.)
Schieren Co., Chas. A., 76 Ferry St., New York, N. Y.
Taylor Belting Co., 247 S. Meridian St., Indianapolis, Ind.
Vim—See Houghton & Co.
Wetprufe—See Hide, Leather & Belting Co.
Wilder & Co., 1036 Crosby St., Chicago, Ill.
Williams & Sons, I. B., 9 Orchard St., Dover, N. H.

LEATHER, IMITATION—See Leather, Artificial

LEATHER MATS—See Mats, Leather

LEATHER MEASURING MACHINES—See Machines, Leather Measuring

LEATHER MOULDING—See Moulding, Flexible Leather

LEATHER MUD GUARDS—See Fenders, or Mud Guards, Leather

LEATHER, Natural

(Genuine Leather for upholstery and tops; for Artificial or Imitation Leather—See Leather, Artificial)

American Leather Mfg. Co., New & Nuttmann Sts., Newark, N. J. "Stag."
American Oak Leather Co., Kenner St., Cincinnati, O.
Arrow—See Ryan Leather Co.
Beaver—See Straus & Sons, M.
Black Bear—See Radel Leather Mfg. Co.
Blanchard Bro. & Lane, 20 Bruen St., Newark, N. J.
Boulee-Frazer Leather Co., 232 Canal St., New York, N. Y.
Byron & Sons Leather Co., W. D., Williamsport, Md. "Tanok," "Eureka."
Cleveland Tanning Co., Jennings & Dennison Aves., S. W., Cleveland, O.
Eagle—See Reilly Co.
Eagle-Ottawa Leather Co., Grand Haven, Mich. (See page 561.)
Eureka—See Byron & Sons Leather Co.
General Leather Co., 418 Frelinghuysen Ave., Newark, N. J.
Good, I. C. & H. R., Newark, N. J.
Hertz Leather Co., Max, 54-68 Oliver St., Newark, N. J.
Howell & Co., T. T., New & Nuttmann Sts., Newark, N. J. "Lion."
Howell-Hinchman Co., Middletown, N. Y.
Lacka-Tan—See Lackawanna Leather Co.
Lackawanna Leather Co., Hackettstown, N. J. "Lacka-Tan."
Leather Parts Co., 1619-21 Prospect St., Indianapolis, Ind.
Lion—See Howell & Co.
Mentz, John J., 64 Marshall St., Newark, N.J.
Pearce Bros. Leather Co., Newark, N. J.
Radel Leather Mfg. Co., Hamburg Place Rd., Newark, N. J. "Black Bear."
Raser Tanning Co., Ashtabula, O.
Reilly Co., John, 40 Ave. C., Newark, N. J. "Eagle."
Reilly & Son, P., Mott St. & Passaic Ave., Newark, N. J. "Stag."
Roser & Son., Hermann, Glastonbury, Conn.
Ryan Leather Co., Woolsey St., Irvington, N. J. "Arrow."
Shields Bros., Bombay, N. Y.
Smith & Sons, L. M., 59 Lock St., Newark, ark, N. J.
Smyth Co., Charles, 240-50 Central Ave., Newark, N. J.
Stag—See American Leather Mfg. Co.
Stag—See Reilly & Son.
Standard Leather Co. of Pittsburgh, 396 Spring Garden Ave., N. S., Pittsburgh, Pa.
Stengel, Geo., 49 Western Ave., Newark, N. J.
Stengel & Rothschild, Maine & Kossuth Sts., Newark, N. J.
Straus & Sons, M., 440 Frelinghuysen Ave., Newark, N. J. "Beaver."
Tanok—See Byron & Sons Leather Co.
Wilder & Co., 1036 Crosby St., Chicago, Ill.
Wilder Tanning Co., Waukegan, Ill.
Wing Co., Charles, Amesbury, Mass. (Dealers.) (See page 1173.)

LEATHER, Rawhide Lace

(For preventing motor hoods or bonnets from rattling; for Fabric Lace—See Lacing, Fabric)

Chicago Rawhide Mfg. Co., 1301 Elston Ave., Chicago, Ill.
Cocheco—See Williams & Son.
Defiance—See Norwich Belt Mfg. Co.
Duckwall Belting & Hose Co., 201-05 N. West St., Indianapolis, Ind. (See page 637.)
Eagle—See Mooney Belting Co.
Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for "G & K" Leather.) (See page 125.)
G & K—See Graton & Knight Mfg. Co.
Gay, Fred E., Olneyville, R. I.
General Tanning Corp., Chester, Mt. Vernon & Melborn Aves., Irvington, N. J.
Graton & Knight Mfg. Co., Worcester, Mass. "G. & K." (See page 119.)
H. L. Lacing Co., 136 W. Third St., Cincinnati, O.
Hide Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind. (See page 121.)
Hunt Co., Henry C., 261 Franklin St., Boston, Mass. (See page 117.)
Jewell Belting Co., 55 Trumbull St., Hartford, Conn.
Leather Parts Co., 1619-21 Prospect St., Indianapolis, Ind.
Missouri Belting Co., 1021-29 S. Grand Ave., St. Louis, Mo. "Victor."
Mooney Belting Co., 844 W. Sixth St., Cincinnati, O. "Eagle."
National Leather Co., 161 South St., Boston, Mass.
National Leather Belt Co., 342 E. 88th St., New York, N. Y.
Norwich Belt Mfg. Co., N. Main St., Norwich, Conn. "Defiance."
Rahmann & Co., Geo., 31 Spruce St., New York, N. Y.
Victor—See Missouri Belting Co.
Weatherhead-Thompson Co., Pawtucket, R. I.
Williams & Sons, I. B., 9 Orchard St., Dover, N. H. "Cocheco."

LEATHER STRAPS—See Straps, Leather

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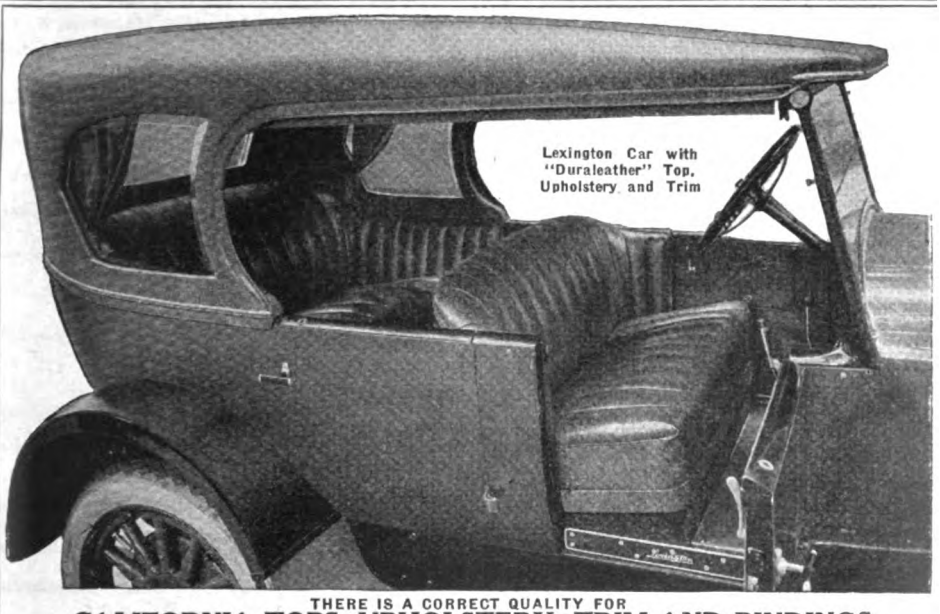

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LEATHER TIRES—See Tires, Leather

LEATHER TOPS—See Tops, Automobile

LEATHER TUFTING WASHERS — See Washers, Tufting

LEATHER, UPHOLSTERY—See Leather, Artificial; also Leather, Natural

LEATHER WASHERS — See Washers, LEATHER

LEGGINGS, Motorists

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. "Reliance," "Napoleon," "Teolnone," "Universal," "Boulevard," "Harvard," "National." (See page 321.)

B. E. Mfg. Co., 18 W. 18th St., New York, N. Y. "Bemco." (See page 321.)

Bantlin Co., Julius J., Cincinnati, O. (See page 505.)

Bemco—See B. E. Mfg. Co.

Boulevard—See Atlas Specialty Mfg. Co.

Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.

Colt-Cromwell Co., 313 Broadway, New York, N. Y.

Hagerstown Shoe & Legging Co., Hagerstown, Md. "Halco."

Halco—See Hagerstown Shoe & Legging Co.

Harvard—See Atlas Specialty Mfg. Co.

Napoleon—See Atlas Specialty Mfg. Co.

Nathan Novelty Mfg. Co., 55 Fifth Ave., (See page 321.)

National—See Atlas Specialty Mfg. Co.

Premier Auto Novelty Mfg. Co., 375 W. Broadway, New York, N. Y.

Reliance—See Atlas Specialty Mfg. Co.

Segco—See Syracuse & Eldridge Glove & Legging Co.

Syracuse & Eldridge Glove & Legging Co., 1108 Spring St., Syracuse, N. Y. "Segco."

Teolnone—See Atlas Specialty Mfg. Co.

Universal—See Atlas Specialty Mfg. Co.

Wiley-Bickford-Sweet Co., 80 Pliny St., Hartford, Conn.

LENSES, DEFLECTING—See Dimmers, Headlight

LENSES, DIFFUSING—See Dimmers, Headlight

LENSES, DIMMING—See Dimmers, Headlight

LENSES, ORDINARY LAMP—See Glasses, Lamp

LENSES, SPECIAL—See Dimmers, Headlight

LETTERS, STEEL—See Stamps, Steel

LEVER BALLS—See Balls, Composition Control Lever

LEVER ENGINE STARTERS—See Starters, Manual

LEVER EXTENSIONS—See Extensions, Gear Shift Lever

LEVER GRIPS—See Grips, Throttle and Spark

LEVER LOCKS, EMERGENCY GEAR, FOR FORDS—See Locks, Emergency Gear Lever

LEVER LOCKS FOR FORDS—See Locks, Spark and Throttle Lever

LEVER STARTERS—See Starters, Manual

LEVERS, Brake and Gear Shift

(Finished or Machined Levers. For Levers in the rough—See Castings; also Forgings)

American Hard Rubber Co., 11 Mercer St., New York, N. Y.

Baker Gun & Forging Co., Batavia, N. Y. (See page 639.)

Brewer Tichener Corp., Cortland, N. Y. (See page 567.)

Brown-Lipe Gear Co., Syracuse, N. Y. (See page 597.)

Cotta Transmission Co., 2340 11th St., Rockford, Ill.

Fuller & Sons Mfg. Co., Kalamazoo, Mich. (See page 563.)

Hazard Motor Mfg. Co., 22 Scherer St., Rochester, N. Y.

Konigslow Mfg. Co., Otto, 3501 Perkins Ave., Cleveland, O.

Piper Machine Co., 560-70 N. Elder Ave., Indianapolis, Ind.

S. A. Machine Co., 2114 E. Woodridge St., Detroit, Mich.

Savage Arms Corp., Sharon, Pa.

Warner Gear Co., Muncie, Ind. (See page 457.)

LEVERS, CONTROL—See Levers, Brake and Gear Shift

LEVERS, GEAR SHIFT—See Levers, Brake

LICENSE HOLDERS—See Holders, License

LICENSE NUMBERS — See Numbers, License

LIFE PRESERVERS, AVIATORS—See Preservers, Aviators' Life

LIFTERS, STORAGE BATTERY—See Carriers, Storage Battery

LIFTERS, TIRE—See Tools, Tire

LIFTERS, VALVE—See Rods, Adjustable Valve Lift; also Tools, Valve

LIFTING JACKS—See Jacks, Lifting

LIGHT DEFLECTORS—See Dimmers or Shades, Headlight

LIGHT FUSES—See Fuses, Electric

LIGHT REGULATORS FOR FORDS—See Regulators, Electric Light

LIGHT STANDS—See Lights, Wash Stand

LIGHT SWITCHES—See Switches, Light

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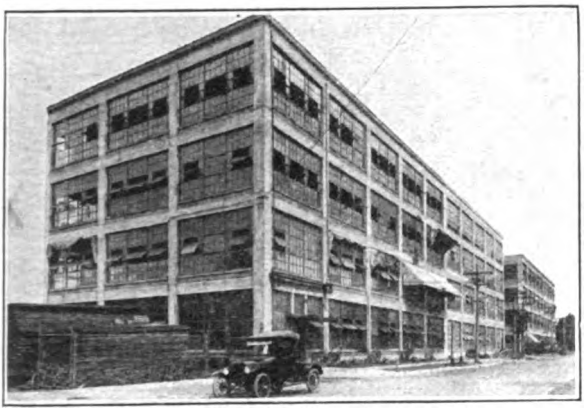

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Rigidity, Strength and Large Carrying Capacity are the three BIG points of interest in the National Luggage Carrier. Made of steel, with SIX points of anchorage, this Carrier will prove the biggest seller of the year. Costs no more, and pays standard profits.

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National Luggage Carriers are so constructed as to be easily attached to any running board without tools. Fasten to both running board and fenders—solid type of attachment. The adjustment in length is accomplished by set screws, as illustrated. Nothing to break or get out of order. Make the National YOUR leading accessory in Luggage Carriers.
Order through your jobber, or direct from factory if your jobber cannot make delivery.

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LIGHTERS, Acetylene Lamp

(See also Burners, Special Acetylene Lamps)

Adjustable Lighter Co., 18 Pearl St., Newton, Mass.

Feeser Co., Frank S., 1102 Prospect St., Indianapolis, Ind. "Superior."

Ideal Brass Works, 560 N. Elder Ave., Indianapolis, Ind.

Rousseau, David, Ossining, N. Y.

Superior—See Feeser Co.

LIGHTERS, CIGAR—See Lighters, Electric Cigar

LIGHTERS, Electric Cigar

(For use on car from regular lighting battery)

Art Metal Works, Aronson Sq., Newark, N. J. "Ronson," "Paragon." (See page 503.)

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for "Presto" Lighters.) (See page 275.)

Auto-Spark-Lite—See McAdams Sales Co

Century—See Mabeys Electric & Mfg. Co.

Cig-R-Lite—See Electric Automatic Cigar Lighter Co.

Cowles & Co., C., New Haven, Conn. (See page 651.)

Cuno Engineering Corp., 80 S. Vine St., Meriden, Conn.

Electric Automatic Cigar Lighter Co., 556 W. 27th St., New York, N. Y. "Cig-R-Lite."

Genco—See General Scientific Equipment Co.

General Scientific Equipment Co. (North Philadelphia), Philadelphia, Pa. "Genco."

Gohring—See Taylor Co.

Handy—See Picard & Co.

Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributor for Cuno Lighters.) (See page 1187.)

Inter-State Sales Co., Rochester, N. Y. (Sole Distributors for "Shur Products, Inc., Rochester, N. Y. "Shur Lite.") (See page 565.)

McAdams Sales Co., J. C., 51 E. 42nd St., New York, N. Y. (Sole Distributors for Queensboro Tool & Die Co., Long Island City, N. Y. "Auto-Spark-Lite.") (See page 565.)

Mabeys Electric & Mfg. Co., 968 Ft. Wayne Ave., Indianapolis, Ind. "Century."

Metal Specialties Mfg. Co., 338-52 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 547.)

Morse, Frank W., 289 Congress St., Boston, Mass. (See page 549.)

O'Brien Mfg. Co., Joseph F., 391 Broadway, New York, N. Y.

Paragon—See Art Metal Works.

Picard & Co., A. J., 9 W. 61st St., New York, N. Y. "Handy."

Presto—See Metal Specialties Mfg. Co.

Queensboro Tool & Die Co.—See McAdams Sales Co.

Ronson—See Art Metal Works.

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco."

Seco—See Spielman Electric Co.

Shur-Lite—See Inter-State Sales Co.

Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) (See page 301.)

Spielman Electric Co., 1931 Broadway, New York, N. Y. "Seco."

Taylor Co., H. D., 99-115 Oak St., Buffalo, N. Y. "Gohring."

LIGHTERS, Electric Cigar, for Fords

(For use in car and to operate on current from magneto)

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for "Presto" Lighters.) (See page 275.)

Metal Specialties Mfg. Co., 338-52 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 547.)

Presto—See Metal Specialties Mfg. Co.

LIGHTING BATTERIES—See Batteries, Storage

LIGHTING DYNAMOS—See Generators, Electric Lighting

LIGHTING GENERATORS — See Generators, Electric Lighting

LIGHTING PLANTS—See Plants, Farm Lighting

LIGHTING SYSTEMS—See Systems, Electric Lighting

LIGHTS, Curtain

(For Glass Curtain Lights—See Windows, Glass Curtain)

Auto-Vehicle Parts Co., 3301 Colerain Ave., Cincinnati, O. "Auveco."

Auveco—See Auto-Vehicle Parts Co.

B. E. Mfg. Co., 18 W. 18th St., New York, N. Y. "Bemco." (See page 321.)

Bemco—See B. E. Mfg. Co.

Brewer Tichener Corp., Cortland, N. Y. "Pioneer." (See page 567.)

Buob & Scheu, 500-10 Webster St., Cincinnati, O. "Pioneer." (See page 325.)

Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Stik-Tite."

Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.

Co-Zee—See Omaha Auto Top Co.

Doerner & Co., 4127 32d St., Cincinnati, O. "Paragon."

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. "E. Z. In." (See page 545.)

E. Z. In—See Ero Mfg. Co.

Genesee Mfg. Co., 516-18 Harrison St., Flint, Mich.

H & B—See Holmes & Bostrom Bros.

Hodes-Zink Mfg. Co., 312 W. State St., Fremont, O. "Sure-Fit."

Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributor for "Stik-Tite" Lights.) (See page 1187.)

Holmes & Bostrom Bros., 365 17th Ave., Milwaukee, Wis. "H & B."

Krimsky, Emil J., 1440 S. Michigan Ave., Chicago, Ill.

Lockwood Mfg. Co., Kansas City, Mo. (See page 323.)

McAvoy Mfg. Co., 4535 Fullerton Ave., Chicago, Ill.

Mobile Top Co., 26 Selden Ave., Detroit, Mich.

Omaha Auto Top Co., 709-11 S. 15th St., Omaha, Neb. "Co-Zee."

Paragon—See Doerner & Co.

Pioneer—See Brewer Tichener Corp.

Pioneer—See Buob & Scheu.

Replace Light Mfg. Co., 2303 Sixth Ave., Rock Island, Ill.

Stik-Tite—See Cincinnati Auto Specialty Co.

Sure-Fit—See Hodes-Zink Mfg. Co.

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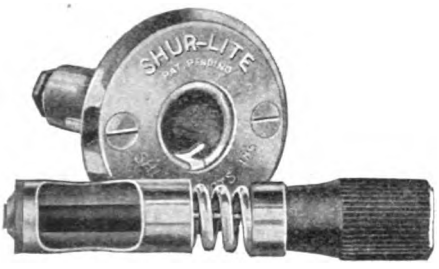
SHUR-LITE
no wire
Cigar Lighter



"A Red Hot Winner"

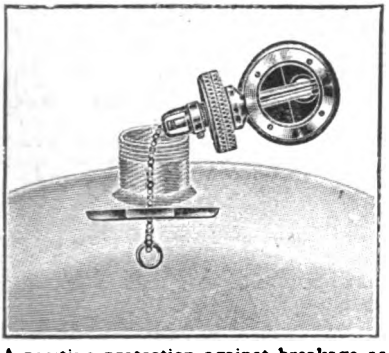
Inquire of your jobber

Inter-State Sales Co.

Rochester, N. Y.

The Schlaich Lock

FOR BOYCE MOTO METERS



A positive protection against breakage as well as theft. Can be installed by a child. No keys to bother with when filling radiator. Made in four sizes.

No. 1, for "De Luxe" and Truck and "Tractor" Models.....$2.00
No. 2, for "Standard" and "Universal".... 1.80
No. 3, for "Junior" and "Ford"..... 1.80
No. 4, for "All Overland Types"..... 1.50

ATTRACTIVE DISCOUNT TO DEALERS

Write for Details

Indorsed and used as regular equipment on DE LUXE MODEL MOTO METERS by The Moto Meter Company, Inc.

The J. C. McAdams Sales Company
51 East 42d Street.....New York, N. Y.

THE CLIMAX MOTOR INDICATOR

A DEVICE

Indicating the Actual Temperature and Performance of the Lubricating System Upon Which Depends the Life and Proper Operation of a Gasoline Motor.

Combines in one instrument—a Pressure Gauge—an Oil Sight Feed —and a Motor Heat Indicator.

Eliminates Repair Bills due to running a car with insufficient lubrication because it keeps you in constant knowledge of the pressure, quantity and temperature of the circulating oil in your motor.

Installation is made on the dash, where it is always visible from the driver's seat.

Special types for Overlands, Buicks and other cars which can be easily installed.

Engineers of automotive plants are invited to investigate.

Our discounts are so arranged that the supply trade will find this a most profitable accessory.

CLIMAX MOTOR DEVICES
CHAGRIN FALLS, OHIO

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LIGHTS, Curtain, for Fords

(Celluloid light or window with fabric or leather binding and special fasteners for replacing damaged rear curtain lights)

A. & E. Auto Top Co., 33-35 E. Cross St., Ypsilanti, Mich. "Standard," "Gypsy." (See page 325.)

American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "3-A-Co."

Aristocrat—See Ero Mfg. Co.

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 321.)

Auto-Vehicle Parts Co., 3301 Colerain Ave., Cincinnati, O. "Auveco."

Auveco—See Auto-Vehicle Parts Co.

Brewer Tichener Corp., Cortland, N. Y. (See page 567.)

Buettner Co., Charles H., Cincinnati, O. "Unisco."

Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.

Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Stik-Tite."

Crawford Mfg. Co., 211 N. Foushee St., Richmond, Va.

Doerner & Co., 4127 32d St., Cincinnati, O. "Paragon."

Economy Seat Co., 3132-36 S. Canal St., Chicago, Ill.

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. "Aristocrat." (See page 545.)

Ever-Clear—See Proos Mfg. Co.

Fitzwell—See Niagara Fabric Mfg. Co.

Genesee Mfg. Co., 516-18 Harrison St., Flint, Mich.

Golden Mfg. Co., 130-32 Marietta St., Atlanta, Ga.

Gordon Co., J. P., 555 N. Fourth St., Columbus, O. (See Page 319.)

Gypsy—See A & E Auto Top Co.

H & B—See Holmes & Bostrom Bros.

Hastings Mfg. Co., 36 Mill St., Hastings, Mich. (See page 567.)

Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributor for "Stik-Tite" Lights.) (See page 1187.)

Holmes & Bostrom Bros., 365 17th Ave., Milwaukee, Wis. "H & B."

Limolite—See Monarch Auto Specialties Co.

Lockwood Mfg. Co., Kansas City, Mo. (See page 323.)

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

Monarch Auto Specialties Co., 1211-13 Clybourn Ave., Chicago, Ill. "Limolite."

Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."

Paragon—See Doerner & Co.

Powers Mfg. Co., Waterloo, Ia. "Three-In-One. (See page 593.)

Proos Mfg. Co., Grand Rapids, Mich. "Ever-Clear." (See page 567.)

Replace Light Mfg. Co., 2308 Sixth Ave., Rock Island, Ill.

R-E—See Roose Mfg. Co.

Roose Mfg. Co., 327-33 W. Main St., Louisville, Ky. "R-E." (See pages 129, 151, 325 and 327.)

Simon & Co., S. C., 325 N. Second St., Philadelphia, Pa.

Standard—See A. & E. Auto Top Co.

Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo.

Stik-Tite—See Cincinnati Auto Specialty Co.

3-A-Co.—See American Automobile Accessories Co.

Three-in-One—See Powers Mfg. Co.

Unisco—See Buettner Co.

LIGHTS, DOME—See Lights, Electric Dome

LIGHTS, Electric Dome

Art Work Shop, 700 Main St., Buffalo, N. Y. (See page 503.)

Campbell Co., A. S., 276 Commercial St., Boston, Mass. "Cello."

Carey-McFall Co., 2156 E. Dauphin St., Philadelphia, Pa.

Cello—See Campbell Co.

Columbus Auto Brass Co., Columbus, O. (See page 1139.)

Cowles & Co., C., New Haven, Conn. (See page 651.)

Diamond H—See Hart Mfg. Co.

English & Mersick Co., New Haven, Conn. (See pages 623 and 783.)

Guide Motor Lamp Mfg. Co., Madison Ave., Cleveland, O.

Hart Mfg. Co., Hamilton St., Hartford, Conn. "Diamond H."

Holophane Glass Co., 340 Madison Ave., New York, N. Y.

Indiana Lamp Co.—See Zinke Co.

Kilborn-Sauer Co., Post Road, Fairfield, Conn.

Liberty Works, Egg Harbor City, N. J. (See page 549.)

Morse, Frank W., 289 Congress St., Boston, Mass. (See page 549.)

Moswell Mfg. Co., 175 Grand St., New York, N. Y.

Mt. Vernon Co., Mt. Vernon, N. Y.

O'Brien Mfg. Co., Joseph F., 391 Broadway, New York, N. Y.

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco."

Shepard Art Metal Co., Detroit, Mich. (See page 515.)

Superior Lamp Mfg. Co., 148-50 W. 52d St., New York, N. Y.

Taylor Co., H. D., 99-115 Oak St., Buffalo, N. Y.

Vesta Battery Corp., 2100 Indiana Ave., Chicago, Ill.

White Mfg. Co., 155 Cannon St., Bridgeport, Conn.

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Indiana Lamp Co., Connersville, Ind.) (See page 308.)

LIGHTS, Electric Flash

(Portable Flash or Pocket Lights or Lanterns)

American Carbon & Battery Co., East St. Louis, Ill.

American Ever Ready Works of National Carbon Co., 303 Thompson Ave., Long Island City, N. Y. "Eveready."

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for "Presto" Lights.) (See page 275.)

Bailey Co., W. J., Newark, N. J. "Midget."

Burleigh, Geo. K., Penacook, N. H. "Fire Fly."

Delta Electric Co., 313-405 E. Fourth St., Marion, Ind.

Diamond Electric Specialties Corp., 101-03 S. Orange Ave., Newark, N. J.

Eveready—See American Ever Ready Works of National Carbon Co.

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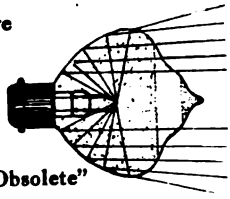
Electric Automobile Bulbs

Nitro and Vacuum Types—All Sizes

Simplex No Glare

The Auto Lamp of the Hour and Future

"Makes Lenses Obsolete"



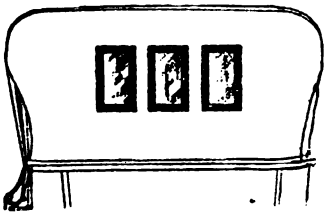
We are the sole manufacturers of the SIMPLEX No Glare Auto Lamp shown in the illustration. The patented exclusive feature of this lamp is its Parabolic shape. The lower and upper portions are frosted. This forms a light-throwing reflector, directing a strong, clear light beam on the road. This bulb is legal from coast to coast and can be used with or without lenses. Simple and efficient—Sells wherever displayed. We also manufacture standard bulbs for headlights, dash and tail lights and also full line of lamps for all lighting purposes. Catalog, including prices, on request.

INTERNATIONAL INCANDESCENT LAMP WORKS, Inc.

Bergenline and Franklin Streets, Union Hill, N. J., U. S. A.

"EVER-CLEAR"

Rear Curtain Lights FOR FORD CARS



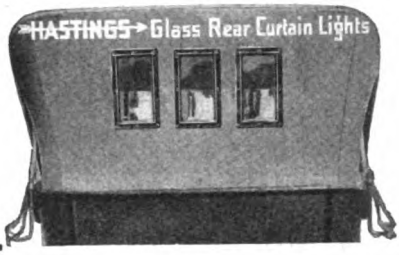
These glass lights, which are made to fit the openings in a Ford, increase the attractiveness of the car.

Light steel rust-proof frames, finished in black enamel (fired) are securely held together with rust-proofed screws through the reinforced edges, preventing rattling or tearing of curtains.

WE ALSO MANUFACTURE ROBE RAILS FOR FORDS.

Write us today for our terms to the trade

PROOS MFG. COMPANY
Grand Rapids, Michigan



A Dress-Up or Fords

Gives the Ford a smart look. Protects from weather. Outwears celluloids many times. Will not tear or sag curtain. The glass fits present opening; metal sashes, one on each side, clamp tightly to reinforced edges of opening with eight screws.

Set of three	$2.50
West of Rockies	2.70
In Canada	3.50

Ask Your Jobber or Write to Us for Catalog

Besides Curtain Lights the Hastings Line of Ford Necessities includes Tire Carriers—Expansion and Cradle type in single and double models, for side or rear—Ford Heavy Duty Truck Tire Carriers, Bracket Side Carriers, single and double—Ford Stabilizers and patented-spring Bumpers.

Hastings Manufacturing Company
36 Mill Street, Hastings, Michigan

PIONEER CURTAIN LIGHTS

Make the Open Top Beautiful

MANY SIZES

Rounds—Ovals—Rectangles

SEND FOR ILLUSTRATED WALL HANGER AND FOLDER TO

Brewer Titchener Corp.
CORTLAND, N. Y.

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LIGHTS, Electric Flash (Continued)

Federal Sign System, Lake & Desplaines Sts., Chicago, Ill.

Fire Fly—See Burleigh, Geo. K.

Franco Electric Corp., 104 S. Fourth St., Brooklyn, N. Y.

Grether Fire Equipment Co., 312-14 E. Second St., Dayton, O.

Hipco—See Hipwell Mfg. Co.

Hipwell Mfg. Co., 325-35 North Ave., Pittsburgh, Pa. "Hipco."

Kwik-Lite—See Usona Mfg. Co.

Metal Specialties Mfg. Co., 338-52 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 547.)

Midget—See Bailey Co.

Novo Mfg. Co., 424 W. 23d St., New York, N. Y.

O-U-Lyte—See Weder Co.

Presto—See Metal Specialties Mfg. Co.

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco."

Smith Mfg. Co., F. A., Rochester, N. Y. (See page 293.)

Universal Carbon Co., First St. & Riverside Ave., Dundee, Ill.

Usona Mfg. Co., 1 Hudson St., New York, N. Y. "Kwik Lite."

Weder Co., 4545 Germantown Ave., Philadelphia, Pa. "O-U-Lyte."

LIGHTS, ELECTRIC GAGE—See Lamps, Electric Dash

LIGHTS, ELECTRIC HEAD—See Headlights, Electric

LIGHTS, DOME—See Lights, Electric Dome

LIGHTS, GAGE—See Lamps, Electric Dash

LIGHTS, HEAD—See Lamps, Acetylene; also Headlights, Electric

LIGHTS, Parking

(Special Electric or Oil Lamps for attachment to Wind Shield or Fender to be used instead of regular lamp equipment when car is parked.)

American Auto Lamp Co., Union Hill, N. J. "Yankee." (See page 549.)

Cowles & Co., C., New Haven, Conn. (See page 651.)

K-D Lamp Co., Cincinnati, O. (See page 493.)

Metal Spinning & Plating Co., 39 S. Charles St., Baltimore, Ind. "Victory."

Mirror Park-Lite Corp., 208 W. 17th St., New York, N. Y. "Park-Lite." (See page 593.)

Park-Lite—See Mirror Park-Lite Corp.

Rosco—See Rosen & Co.

Rose Mfg. Co., Philadelphia, Pa. "Never-out." (See page 711.)

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco."

Taylor-Southard Co., 206 Wells St., Milwaukee, Wis.

Victory—See Metal Spinning & Plating Co.

Yankee—See American Auto Lamp Co.

LIGHTS, POCKET—See Lights, Electric Flash

LIGHTS, REEL—See Lamps, Electric Hand; also Lights, Spot

LIGHTS, Spot

(For attachment to Wind Shield)

American Auto Lamp Co., Union Hill, N. J. "Yankee." (See page 549.)

Anderson Electric & Equipment Co., 154-60 Whiting St., Chicago, Ill. "Autoree- (See page 762.)

Aristocrat—See Raydex Mfg. Co.

Aut-O-eye—See Lipman Pump Works.

Autoreelite—See Anderson Electric Specialty Co.

B. & L. Auto Lamp Co., 103-05 Mott St., New York, N. Y.

Beamolite—See Motor Specialties Co.

Brown Mfg. Co., Jno. W., Columbus, O. (See page 547.)

Cellbeam Mfg. Co., 344 W. 57th St., New York, N. Y.

Cor-Co-Lite—See Corcoran Lamp Co.

Corcoran Lamp Co., Thomas J., 4900 Spring Grove Ave., Cincinnati, O. "Cor-Co-Lite."

Corcoran-Victor Co., 712 Reading Rd., Cincinnati, O. "Victor."

Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass.

De Luxe—See Zinke Co.

Delight—See K-D Lamp Co.

Delta Electric Co., 313-405 E. Fourth St., Marion, Ind.

Diamond Jay Dee Co., 1400 Michigan Ave., Chicago, Ill. (See page 569.)

Edmunds & Jones Corp., 4440 Lawton Ave., Detroit, Mich.

Faw, J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributors for Culver-Stearns Lamps.) (See page 241.)

Fire Spot—See Kaufmann & Sons.

Flexolight—See Trolley Supply Co.

Fox—See Hardware Mfg. Co.

Gilfillian Bros. Smelting & Refining Co., 217 W. Sixth St., Los Angeles, Cal. "Westerner."

Gray & Davis, Boston, Mass. (See page 911.)

Hardware Mfg. Co., 1410 Dearborn St., Seattle, Wash. "Fox." "Owl."

Howe Lamp & Mfg. Co., 115-23 E. Ontario St., Chicago, Ill.

Indiana Lamp Co.—See Zinke Co.

K-D Lamp Co., Cincinnati, O. "Delight." (See page 493.)

Kaufmann & Sons, Chas., 1623 E. First St., Santa Ana, Cal. "Silverbeam," "Fire Spot."

Kay Bee Mfg. Co., 312 W. 35th St., Los Angeles, Cal.

Kelly, Chas. F. U., 1664 Broadway, New York, N. Y. (Sole Distributor for Raydex Mfg. Co., Brackenridge, Pa.)

Kilbourn-Sauer Co., Post Road, Fairfield, Conn.

Lipman Pump Works, 100 Shirland Ave., Beloit, Wis. "Aut-O-Eye."

Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich.

Motor Specialties Co., Waltham, Mass. "Beamolite."

Owl—See Hardware Mfg. Co.

Parabolite—See Pittsburgh Electric Specialties Co.

Pittsburgh Electric Specialties Co., 396 Broadway, New York, N. Y. "Parabolite."

Pittsburgh Lamp, Brass & Glass Co., Pittsburgh, Pa. "Superior." (See page 361.)

Raydex Mfg. Co., Brackenridge, Pa. "Autocrat." (See page 357.)

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THE MARK OF QUALITY

A GUARANTEE OF SERVICE

Visors for Headlights

The jeweled visor—practical, durable and beautiful. Made of heavy metal, finely finished. Only three sizes. No. 1 for lenses up to 7½" diameter; No. 2, 7½" to 8½"; No. 3, 8½" to 9½". Furnished regularly with red and green jewel in peak. Opal jewel if desired.

High gloss black enamel, per pair, No. 1, $2.00; No. 2, $2.50; No. 3, $3.00.

Heavy nickel plate per pair, No. 1, $2.50; No. 2, $3.00; No. 3, $3.50.

Spotlights. Mirror back.

All metal parts solid brass. Water proof cord. Best plating. 5½" lens.

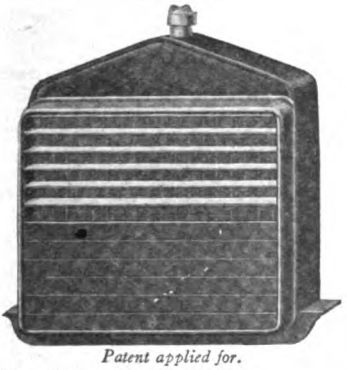
Best black enamel. Nickel trimmed, $7.00. Full heavy nickel plate, $8.00.

Ask for circular about the Diamond Jay Dee, **special rubber neck** spot light, "the light of a thousand uses."

Wind Shield Visors or Awnings

Three styles. No. 1, best heavy fabrikoid, black above, green below on heavy steel frame. No. 2, best fabrikoid, cemented to heavy sheet steel, black above, green below. No. 3, transparent green in fine nickeled frame. Sturdy, brass, adjustable clamps on all.

No. 1, $8.00; No. 2, $12.00; No. 3, $20.00.



Patent applied for.

Wind Shield Wings

Clamps are our own design. The best clamp made. All metal parts, solid brass, rust-proof. Very highest quality glass.

Best wind shield glass, polished edges, round corners, per pair, full nickel, $12.00.

Best heavy polished plate, polished edges, round corners, per pair, full nickel, $18.00.

Fine beveled plate, per pair, full nickel, $24.00.

Clamps only. Glass to be furnished, nickel $5.00. Give glass thickness. In every case state if clamps are wanted for Ford windshield or universal clamps for all other types.

Radiator Shutters. Dual Dash Control.

The only shutter that enables the user to control the radiation of both upper and lower half of the radiator, either separately or together, and do it from the dash. With shell and leaves covered with best fabrikoid cemented to the steel and lined with felt, adding greatly to its heat-retaining qualities, $10.00 to $15.00.

Shock Absorbers. Double Action.

The simplest, strongest, most efficient shock absorber made, regardless of price. Controls spring action, both up and down. A combined snubber and shock absorber. Resistance to shock and recoil adjustable separately or together. Ready for delivery March 1st, 1921.

Price, complete, per pair, $10.00 to $15.00.

Price for trucks, $18.00 to $22.00.

Diamond Jay Dee Products

Diamond Jay Dee Products are reasonable in price, but are unexcelled in quality, design and workmanship. Everything bearing our trade mark is guaranteed completely. You cannot buy better goods.

DIAMOND JAY DEE COMPANY

1400 MICHIGAN AVE. CHICAGO, ILLINOIS

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LIGHTS, Spot (Continued)

Red Spot—See Wakefield Brass Co.
Rerou—See Williams Mfg. Co.
Rosco—See Rosen & Co.
Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco."
S & M Lamp Co., 117 W. 36th Pl., Los Angeles, Cal.
Silverbeam—See Kaufmann & Sons, Chas.
Standard Corp., Outlook Bldg., Columbus, O.
Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 177.)
Sunbeam Mfg. Co., Polson Bldg., Seattle, Wash.
Superior—See Pittsburgh Lamp, Brass & Glass Co.
Superior Lamp Mfg. Co., 148-50 W. 52d St., New York, N. Y.
Trolley Supply Co., Canton, O. "Flexolight."
Vesta Battery Corp., 2100 Indiana Ave., Chicago, Ill.
Victor—See Corcoran Victor Co.
Wakefield Brass Co., F. W., Vermillion, O. "Red Spot." (See page 361.)
Westerner—See Gilfillian Bros. Smelting & Refining Co.
Williams Mfg. Co., 125 W. 35th St., Los Angeles, Cal. "Rerou."
Yankee—See American Auto Lamp Co.
Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Indiana Lamp Co., Connersville, Ind. "De-Luxe.") (See page 308.)

LIGHTS, Spot, for Fords

(For attachment to Wind Shield)

Cor-Co-Lite—See Corcoran Lamp Co.
Corcoran Lamp Co., Thomas J., 4900 Spring Grove Ave., Cincinnati, O. "Cor-Co-Lite."
Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass.
Delta Electric Co., Marion, Ind.
Detroit Starter Co., 124 E. Larned St., Detroit, Mich. "Dynolite."
Dynolite—See Detroit Starter Co.
Faw, J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributors for Culver-Stearns Lamps.) (See page 241.)
Kay Bee Mfg. Co., 312 W. 35th St., Los Angeles, Cal.
Standard Corp., Outlook Bldg., Columbus, O.
Sunbeam Mfg. Co., Polson Bldg., Seattle, Wash.

LIGHTS, TROUBLE—See Lamps, Electric Hand; also Lights, Spot

LIGHTS, Wash Stand

(For lighting car on wash stand)

Aladdin—See Smith Mfg. Co.
Coffin Valve Co., Tolman St., Neponset, Mass. "Neponset."
Muller, Edward, 5031 Hudson Blvd., West New York, N. J.
Neponset—See Coffin Valve Co.
Smith Mfg. Co., I. J., 1007 Ave Q, Brooklyn, N. Y. "Aladdin."
Universal Electric Stage Lighting Co., 240 W. 50th St., New York, N. Y.

LIMIT GAGES—See Gages, Limit

LIMOUSINE LIGHTS—See Lights, Electric Dome

LIMOUSINE TELEPHONES—See Telephones, Limousine

LIMOUSINE VENTILATORS—See Ventilators, Limousine and Fore-door

LIMOUSINE WATCHES—See Watches, Limousine

LINED HOSE—See Hose, Metal Lined

LINEN, Airplane

(See also Fabric, Aircraft)

Courtral Mfg. Co., 115 Franklin St., New York, N. Y.
McBratney & Co., Robert, 121 Franklin St., New York, N. Y.

LINING, Body or Frame

(For use between body sill and steel frame to prevent squeaking)

A-B-C—See American Brake-Lining Co.
American Brake-Lining Co., Lansdale, Pa. "A-B-C." (See page 669.)
American Mills Co., 39 W. 19th St., New York, N. Y. (See page 599.)
American Mills Co. of N. Y., 433 Broadway, New York, N. Y.
Bond Co., Charles, 520 Arch St., Philadelphia, Pa. "Fabritex."
Deco—See Dafoe-Eustice Co.
Dafoe-Eustice Co., 4042 W. Jefferson Ave., Detroit, Mich. "Deco," "Ustus."
Detroit Leather Works, 863 E. Lafayette Blvd., Detroit, Mich. (See page 125.)
Empire Weaving & Belting Corp., East Rochester, N. Y. "Tuftex."
Fabritex—See Bond Co.
Felters Co., Millbury, Mass. (See page 649.)
Flintkote Co., 88 Pearl St., Boston, Mass. "Rex."
Gilmer Co., L. H., Philadelphia, Pa. (See page 123.)
Hide Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind. (See page 121.)
Horton Mfg. Co., F. L., 36 Whittier St., Roxbury, Mass. (See page 605.)
Jaleau—See Uniform Hood Lace Co.
Landers Bros. Co., Dept. A. 2, Toledo, O. (See page 605.)
McElroy Belting & Hose Co., 276-300 Truman St., Hammond, Ind. "Ruberite."
Multibestos Co., Walpole, Mass. (See page 661.)
National Felt Co., Easthampton, Mass.
Powers Mfg. Co., Waterloo, Ia. (See page 593.)
Rex—See Flintkote Co.
Rubber-ite—See McElroy Belting & Hose Co.
Russell Mfg. Co., 508 Russell Ave., Middletown, Conn. (See page 121.)
Smith Belting Co., Manning J., 39 E. Ashmead St. (Germantown), Philadelphia, Pa. (See page 121.)
Tuftex—See Empire Weaving & Belting Corp.
Uniform Hood Lace Co., 1609 College Ave., Indianapolis, Ind. "Jaleau."
Ustus—See Dafoe-Eustice Co.
Western Felt Works, 4115-33 Ogden Ave., Chicago, Ill. (See page 1055.)

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"and besides Raybestos"

Raybestos Molded Clutch Facing is displacing woven facings everywhere, because of better performance and longer life.

Raybestos Brakes are built to specifications. We have been brake specialists since the beginning of the industry.

Raybestos Lined Cold Rolled Steel Cam Brakes for Ford Cars are so made that the lined surface bears on the inside of the brake drum.

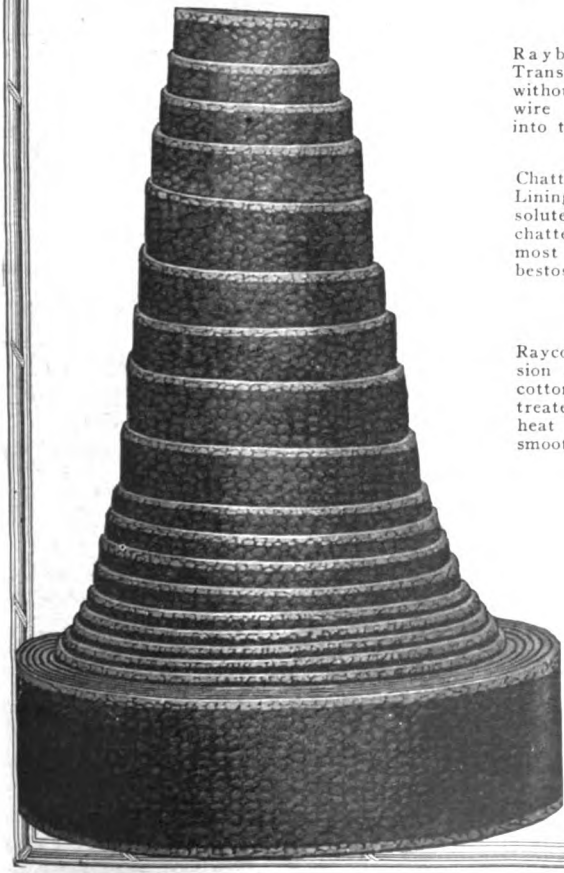
Royal External Emergency Brakes for Ford Cars are built on the same principles as Raybestos Brakes for larger cars and lined with Raybestos.

Raybestos Lined Internal Cam Brakes are specially constructed to replace the regular equipment.

Raybestos for Ford Transmissions is made without wire to prevent wire particles getting into the magneto.

Chatterless Transmission Lining for Ford Cars absolutely eliminates the chatter and wears almost as well as Raybestos.

Rayco Ford Transmission Lining is a woven cotton material that is treated to withstand heat and gives very smooth action.



Raybestos Oak Tanned Fan Belts for Ford Cars are lap stitched, one lap to the belt, two rows of lock stitching, waterproofed, cemented and dressed.

THE RAYBESTOS COMPANY

Factories:
Bridgeport, Connecticut
Peterborough, Ont., Canada

Branches:
Detroit, 1857 Woodward Avenue
Chicago, 1402 South Michigan Avenue
San Francisco, 1403 Chronicle Bldg.
Washington, D. C., 107 Columbian Bldg.

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LINING, Brake

(For lining brakes or clutches—See also Leather, Friction; also Belting, Leather; also Fibre, Hard)

A-B-C—See American Brake-Lining Co.

Advance Automobile Accessories Corp., 1603 S. Michigan Blvd., Chicago, Ill. "White Stripe"

Advance Packing & Supply Co., 80 E. Lake St., Chicago, Ill. "Brakebestos," "Bestallic." (See page 669.)

Ajax—See Asbestos & Rubber Works of America.

Alltex Weaving & Specialty Co., 212 Broadway, New York, N. Y. (See page 667.)

Ambesco—See American Asbestos Co.

Ambler—See Keasbey & Mattison Co.

American Asbestos Co., Norristown, Pa. "Ambesco." (See page 577.)

American Brake-Lining Co., Lansdale, Pa. "A-B-C." (See page 669.)

American Mills Co., 39 W. 19th St., New York, N. Y. "Permanite." (See page 599.)

Anchor Packing Co., 72 Murray St., New York, N. Y. "Ankorite." (See page 669.)

Ankorite—See Anchor Packing Co.

Appleby & Co., T. H., 107 N. Franklin St., Syracuse, N. Y. "Trubestos."

Arno—See Cincinnati Rubber Mfg. Co.

Asbestos & Rubber Works of America, 1821 Broadway, New York, N. Y. Motobestos. "Ajax." (See page 523.)

Autobestos—See Keasbey & Mattison Co.

Axwell Equipment Co., 214 Wood St., Pittsburgh, Pa.

Bestallic—See Advance Packing & Supply Co.

Bestbestos—See Federal Asbestos Co.

Blue Edge—See Woven Steel Hose & Rubber Co.

Brakebestos—See Advance Packing & Supply Co.

Cincinnati Rubber Mfg. Co., Cincinnati, O. "Arno." (See page 523.)

Curry Co., J. W., 2615 Cummins St., Cincinnati, O.

Diamond N—See Norristown Magnesia & Asbestos Co.

Dominion Asbestos & Rubber Corp., 154 Nassau St., New York, N. Y. "Griptite." (See page 575.)

Dugas-Hundley Corp., 29 W. 34th St., New York, N. Y. "Reliance."

Dural Rubber Corp., Maple Ave., Flemington, N. J.

Durwyllan Co., Paterson, N. J. "Wirebestos." (See page 577.)

Dyrabestos—See United Asbestos & Packing Co.

Elektra—See Horton Mfg. Co.

Embestos—See Empire Rubber & Tire Co.

Empire Rubber & Tire Co., Mulberry St. & Clinton Ave., Trenton, N. J. "Embestos."

Empire Weaving & Belting Corp., East Rochester, N. Y. "Tuftex."

Erbestos Brake Lining Co., 242 N. 17th St., Philadelphia, Pa.

Essex Rubber Co., May & Bleakes Sts., Trenton, N. J.

Ever Ready—See Kelso Mfg. Co.

Federal Asbestos Co., 149 Hamburgh Ave., Paterson, N. J. "Bestbestos."

Garco—See General Asbestos & Rubber Co.

General Asbestos & Rubber Co., Charleston, S. C. "Garco." (See Back Cover.)

Globestos—See United & Globe Rubber Co.

Griptite—See Dominion Asbestos & Rubber Corp.

Hartman Products Co.—See Monson, Chas. S.

Horton Mfg. Co., F. L., 36 Whittier St., Roxbury, Mass. "Elektra." (See page 605.)

J-M Non-Burn—See Johns-Manville Co.

Johns-Manville Co., H. W., Madison Ave. & 41st St., New York, N. Y. "J-M Non-Burn."

K. H. K.—See Kay Co.

Kay Co., Kay H., 967 Woodward Ave., Detroit, Mich. "K. H. K." (See pages 83 and 869.)

Keasbey & Mattison Co., Butler Ave., Ambler, Pa. "Ambler," "Autobestos."

Kelso Mfg Co., Trenton, N. J. "Ever-Ready." (See page 577.)

Lins Mfg. Co., W. R. (Roxborough), Philadelphia, Pa. "Linsco."

Linsco—See Lins Mfg. Co.

Longwear—See Wearwell Gasket & Packing Co.

McElroy Belting & Hose Co., 276-300 Truman St., Hammond, Ind. "Rubbestos."

Mikesell Brothers Co., 176-78 N. La Salle St., Chicago, Ill. "Superbestos." (See page 297.)

Modern Belt & Web Co., Emerson Tower Bldg., Baltimore, Md.

Monson, Chas. S., Dime Bank Bldg., Detroit, Mich. (Sole Distributors for Hartman Products Co., Detroit, Mich.)

Motobestos—See Asbestos & Rubber Works of America.

Multibestos Co., Walpole, Mass. (See page 661.)

Norristown Magnesia & Asbestos Co., Norristown, Pa. "Diamond N."

Permanite—See American Mills Co.

Raybestos Co., Bridgeport, Conn. (See page 573.)

Reliance—See Dugas-Hundley Corp.

Rubbestos—See McElroy Belting & Hose Co.

Rusco—See Russell Mfg. Co.

Russell Mfg. Co., 508 Russell Ave., Middletown, Conn. "Rusco." (See page 121.)

S-M-C—See Staybestos Mfg. Co.

Scandinavia Belting Co., 106 Reade St., New York, N. Y.

Shepard Circular Fabric Co., 7-11 Summer St., Worcester, Mass.

Smith Belting Co., Manning J., 39 E. Ashmead St., Philadelphia, Pa. (See page 121.)

Standard Brake Lining Co., Wilkins St., Hudson, Mass.

Staybestos Mfg. Co., 5534 Lena St. (Germantown), Philadelphia, Pa. "S-M-C," "Universal."

Sterling Asbestos Co., 625 Decatur St., Brooklyn, N. Y.

Superbestos—See Mikesell Brothers Co.

Thermoid Rubber Co., Trenton, N. J. (See page 543.)

Trubestos—See Appleby & Co.

Tuftex—See Empire Weaving & Belting Corp.

United Asbestos & Packing Co., Chicago, Ill. "Dyrabestos."

United & Globe Rubber Co., Prospect & Frasier Sts., Trenton, N. J. "Globestos."

Universal—See Staybestos Mfg. Co.

Vogt Mfg. Corp., 408 St. Paul St., Rochester, N. Y.

Wearwell Gasket & Packing Co., Camden, N. J. "Longwear." (See page 673.)

White Stripe—See Advance Automobile Accessories Corp.

Wirebestos—See Durwyllan Co.

Woven Steel Hose & Rubber Co., Trenton, N. J. "Blue Edge."

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DOMINION
Asbestos & Rubber Corp.

Dominion Auto Sheet Packing (Red and Black). The one sheet packing that will answer every automobile gasket demand. Graphited on one side—easily releasing gasket when necessary. Other side natural red and holds gasket to flange. Not affected by gas, oil, heat, water or steam. Will not burn, blow-out nor squeeze-out. Resilient and pliable. Standard sheets 50" x 50" weight square yard 1/32"—2¾ lbs. 1/16"—5½ lbs. Also, in attractive cartons, 40" x 10".

Kidskin Sheet Packing. Kidskin Sheet Packing is especially adapted for service on flanges where gasoline, benzine, naphtha, kerosene, oil, greases, water or air is encountered. Kidskin contains no rubber or mineral matter. It will make neat, even-edged gaskets, at low cost.

Rodtite Auto Pump Packing. Asbestos water pump and valve stem packing designed especially for automobile, airplane, motor truck, motorcycle, motor boat, motor tractor and all other gasoline engine requirements. Packed in ¼ lb. cartons, in ¼" size. Strands may be untwisted to make any size desired.

Griptite Asbestos Brake Lining. The lining with the **Green Edge.** A solid woven asbestos brake lining interwoven with brass wires and **treated all the way through.** It is impregnated with a heat and wear resisting compound and then baked, which renders it impervious to heat, oil and the elements and gives it better wearing qualities. It will not char nor burn out from heat or friction.

Price List (Per Lineal Foot)

Widths	Thickness			
	⅛"	5/32"	3/16"	¼"
1"	.40	.45	.50	.70
1¼"	.50	.55	.60	.80
1½"	.60	.65	.70	.90
1¾"	.70	.75	.80	1.00
2"	.80	.85	.90	1.20
2¼"	.90	.95	1.00	1.30
2½"	1.00	1.05	1.10	1.50
3"	1.20	1.25	1.30	1.70
4"	1.40	1.55	1.70	2.20

Griptite Clutch Facings. Composed of selected, long fibre asbestos, impregnated with a heat and wear-resisting compound and baked. Impervious to the action of oil, grease, heat, gas, etc. In use on all popular makes of cars. Furnished in all sizes.

These are Stock Sizes. Special sizes secured on order.

8"x6"x11/64"
7¾"x5¾"x9/64"
8"x6"x5/32"
7⅝"x5⅞"x5/32"
9"x7 11/32"x5/32"
9"x6½"x⅛"
9"x6¾"x⅛"
8"x6"x⅛"
6⅝"x5⅛"x⅛"
8 7/16"x6¼"x5/32"
9⅞"x6⅞"x⅛"
11⅞"x8⅜"x⅛"
8⅜"x6⅜"x5/32"

Dominion Asbestos & Rubber Corporation
Main Office: 154 Nassau St., New York

SERVICE BRANCHES

Baltimore, Cincinnati, Indianapolis, Los Angeles, New York—67 Murray St.; Norfolk, Philadelphia, San Francisco, Seattle

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LINING, Brake, for Fords

(For lining brake bands and transmission bands)

A-B-C—See American Brake-Lining Co.

Acme—See Appleby & Co.

Advance Automobile Accessories Corp., 1603 S. Michigan Blvd., Chicago, Ill. "White Stripe."

Advance Packing & Supply Co., 80 E. Lake St., Chicago, Ill. "Brakebestos." (See page 669.)

Alltex Weaving & Specialty Co., 212 Broadway, New York, N. Y. (See page 667.)

Ambesco—See American Asbestos Co.

Ambler—See Keasbey & Mattison Co.

American Asbestos Co., Norristown, Pa. "Testbestos," "Ambesco." (See page 577.)

American Brake-Lining Co., Lansdale, Pa. "A-B-C," "Wales." (See page 669.)

American Mills Co., 39 W. 19th St., New York, N. Y. "Duratex," "Standard." (See page 599.)

American Mills Co. of N. Y., 438 Broadway, New York, N. Y. "Tufweb."

American Republics Products Co., New York, N. Y. "Puro Best."

Appleby & Co., T. H., 107 N. Franklin St., Syracuse, N. Y. "Acme," "Trubestos."

Arno—See Cincinnati Rubber Mfg. Co.

Asbestos & Rubber Works of America, 1821 Broadway, New York, N. Y. "Motobestos." (See page 645.)

Autobestos—See Keasbey & Mattison Co.

Axwell Equipment Co., 214 Wood St., Pittsburgh, Pa.

Bond Co., Charles, 520 Arch St., Philadelphia, Pa. "Fabritex."

Brakebestos—See Advance Packing & Supply Co.

Buffalo Weaving & Belting Co., Buffalo, N. Y. (See page 1059.)

Bull Dog—See Reardon Co.

Bull Dog—See Russell Mfg. Co.

Burlington Basket Co., 600 N. Main St., Burlington, Iowa. "Everlasting."

Cincinnati Rubber Mfg. Co., Cincinnati, O. "Arno." (See page 523.)

Couch Bros. Mfg. Co., East Point, Atlanta, Ga.

Dependon Auto Specialty Co., 1408-10 Michigan Ave., Chicago, Ill. "Triplex."

Detroit Cork Co., 534 Book Bldg., Detroit, Mich. (See page 675.)

Doerner & Co., 4127 32d St., Cincinnati, O. "Paragon."

Dominion Asbestos & Rubber Corp., 154 Nassau St., New York, N. Y. "Griptite." (See page 575.)

Durabestos—See United Asbestos & Packing Co.

Dural Rubber Corp., Maple Ave., Flemington, N. J.

Duratex—See American Mills Co.

Durwyllan Co., Paterson, N. J. "Wirebestos." (See page 577.)

Eagle—See Russell Mfg. Co.

Empire Weaving & Belting Corp., East Rochester, N. Y. "Tuftex."

Essex Rubber Co., May & Bleakes Sts., Trenton, N. J.

Ever Ready—See Kelso Mfg. Co.

Everlasting—See Burlington Basket Co.

Fabritex—See Bond Co.

Federal Asbestos Co., 149 Hamburgh Ave., Paterson, N. J. "Fordbestos."

Ford Mfg. Co., Howard, Coldwater, Mich.

Fordbestos—See Federal Asbestos Co.

Garco—See General Asbestos & Rubber Co.

Geisel Co., Otto E., 3200-06 Oxford St., Philadelphia, Pa.

General Asbestos & Rubber Co., Charleston, S. C. "Garco." (See Back Cover.)

Gilmer Co., L. H., Philadelphia, Pa. (See page 123.)

Globestos—See United & Globe Rubber Co.

Griptite—See Dominion Asbestos & Rubber Corp.

Hebert Mfg. Co., 575 Central St., Franklin, N. H.

Hold-Fast—See Illinois Rubber Tire Co.

Holdwell—See Mikesell Bros. Co.

Illinois Rubber Tire Co., 1803 Michigan Ave., Chicago, Ill. "Hold-Fast."

J-M Non-Burn—See Johns-Manville Co.

Johns-Manville Co., H. W., Madison Ave. & 41st St., New York, N. Y. "J-M Non-Burn."

Keasbey & Mattison Co., Butler Ave., Ambler, Pa. "Ambler," "Autobestos."

Kelly, Chas. F. W., 1664 Broadway, New York, N. Y. (Sole Distributor for Raydex Mfg. Co., Brackenridge, Pa.)

Kelso Mfg. Co., Trenton, N. J. "Ever Ready." (See page 577.)

Krego—See Krieger & Son.

Krieger & Son, E., Tompkins Ave. & Quincy St., Brooklyn, N. Y. "Krego."

Libby Auto Accessories, Inc., 4 W. 125th St., New York, N. Y. (See page 1119.)

Lins Mfg. Co., W. R. (Roxborough), Philadelphia, Pa. "Linsco."

Linsco—See Lins Mfg. Co.

Longwear—See Wearwell Gasket & Packing Co.

McElroy Belting & Hose Co., 276-300 Truman St., Hammond, Ind. "Zebra."

Mikesell Brothers Co., 176-78 N. La Salle St., Chicago, Ill. (See page 297.)

Modern Belt & Web Co., Emerson Tower Bldg., Baltimore, Md.

Monarch Auto Specialties Co., 1211-13 Clybourn Ave., Chicago, Ill.

Monasco—See Monarch Auto Specialties Co.

Motobestos—See Asbestos & Rubber Works of America.

Paragon—See Doerner & Co.

Powers Mfg. Co., Waterloo, Ia. (See page 593.)

Puro Besto—See American Republics Products Co.

Raybestos Co., Bridgeport, Conn. (See page 573.)

Raydex Mfg. Co., Brackenridge, Pa. (See page 357.)

R-E—See Roose Mfg. Co.

Reardon Co., 209 State St., Peoria, Ill. "Bull Dog."

Reflex Auto Accessory Co., Fort Wayne, Ind.

Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E." (See pages 129, 151, 325 and 327.)

Rusco—See Russell Mfg. Co.

Russell Mfg. Co., 508 Russell Ave., Middletown, Conn. "Rusco," "Bull Dog," "Eagle." (See page 121.)

S-M-C—See Staybestos Mfg. Co.

Scandinavia Belting Co., 106 Reade St., New York, N. Y.

Smith Belting Co., Manuing J., 39 E. Ashmead St. (Germantown), Philadelphia, Pa. (See page 121.)

Standard—See American Mills Co.

Standard Brake Lining Co., Wilkins St., Hudson, Mass.

Staybestos Mfg. Co., 5534 Lena St. (Germantown), Philadelphia, Pa. "Universal," "S-M-C."

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We Recommend

WIREBESTOS

Brake Lining

Made of Wire and Solid Asbestos

It cannot BURN
Is woven to give long wear
Will not peel off in layers
Treated by Formula to assure the highest co-efficiency of Friction
It will positively stop your Car or Truck
It is easy to apply

Have peace of mind by using

WIREBESTOS

Brake Lining

Send for circular of our other good quality products

Durwyllan Co

Manufacturers
Main Office and Factory: Paterson, N. J.

REG. U.S. PAT. OFF.

TESTBESTOS

AUTOMOBILE BRAKE LINING AND CLUTCH FACINGS

REASONABLY PRICED
SATISFACTION GUARANTEED

MANUFACTURED BY

AMERICAN ASBESTOS CO.
NORRISTOWN
PENNSYLVANIA, U. S. A.

Manufacturers of Asbestos Textiles Generally

Six Million Cars

NEED BRAKE LINING

HOW much of this business are you going to get?

Over 50 million feet of brake lining will be sold during 1920. Have you put in a stock? Are you ready to supply the great demand?

Goods well displayed are half sold. That is why we supply a very attractive display stand for EVERREADY Brake Lining.

EVERREADY is a Solid Woven Asbestos Friction Fabric. It is the result of 11 years' experience in the manufacture of millions of feet of this material.

Write today for full details both as to EVERREADY Brake Lining and our display cabinet which we give to the trade.

Ford Transmission Sets

EVERREADY CLUTCH FACING

EVERREADY Clutch Facings are made for all of the leading cars and trucks.

Clutches faced with EVERREADY Friction Fabric engage with the smoothest possible action. NEVER GRAB—NEVER SLIP.

Our 100-ton presses enable us to compress our Clutch Facings to an extreme density and to such dimensions as may be called for under the most exacting specifications.

Immediate Deliveries—Write to

KELSO MANUFACTURING CO.

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Export Department
Keegan Agrahamian & Co., Inc.
250 West 54th Street, New York

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D. F. ROSE
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New York
J. H. COHEN CO., Inc.
Bridgeport, Conn.
AMERICAN MOTOR SPECIALTIES CO.
971 Broad St.
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AMERICAN SALES COMPANY
Baltimore, Md.
R. J. CROZIER CO.
North American Bldg.
Philadelphia, Pa.
STATE TIRE & RUBBER CO.
New Rochelle, N. Y.
STATE TIRE & RUBBER CO.
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PEERLESS VULCANIZING WORKS
Albany, N. Y.
PAUL D. GILLESPIE, Incorporated
Troy, N. Y.
THE BILLINGSLEY COMPANY
Washington, D. C.
THE WAY CO.
Houston, Texas
F. R. CROCKER
Kansas City
JOHN VAN BENSCHOTEN
Poughkeepsie, N. Y.
BROWN AUTO SUPPLY CO.
Kingston, N. Y.
ROCKLAND AUTO & SUPPLY CO.
Nyack, N. Y.
ALDREC MOTOR ACCESSORIES CO.
New Bedford, Mass.
MOTOR SUPPLY CO.
Pawtucket, Mass.
MOTOR ACCESSORIES CO.
Boston, Mass.
HANDY PRODUCTS COMPANY
Cleveland, Ohio
NORMAN COWAN CO.
San Francisco, Cal.

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LINING, Brake, for Fords (Continued)

Sterling Asbestos Co., 625 Decatur St., Brooklyn, N. Y.

Testbestos—See American Asbestos Co.

Thermoid Rubber Co., Trenton, N. J. (See page 543.)

Triplex—See Detroit Auto Specialty Co.

Trubestos—See Appleby & Co.

Tuftex—See Empire Weaving & Belting Corp.

Tufweb—See American Mills Co. of New York.

United & Globe Rubber Co., Prospect & Frasier Sts., Trenton, N. J. "Globestos."

United Asbestos & Packing Co., 629 Washington Blvd., Chicago, Ill. "Durabestos."

Universal—See Staybestos Mfg. Co.

Viking—See Vogt Mfg. Corp.

Vogt Mfg. Corp., Rochester, N. Y. "Viking." (See page 1051.)

Wales—See American Brake-Lining Co.

Wearwell Gasket & Packing Co., Camden, N. J. "Longwear." (See page 673.)

White Stripe—See Advance Automobile Accessories Corp.

Wirebestos—See Durwyllan Co.

Woven Steel Hose & Rubber Co., Trenton, N. J.

Wright Motor Specialties Co., 1326 Michigan Ave., Chicago, Ill.

Zebra—See McElroy Belting & Hose Co.

LINING CUTTERS—See Cutters, Brake Lining

LINING, FRAME—See Lining, Body or Frame

LINING, TRANSMISSION BAND FOR FORDS—See Lining, Brake

LINKS, STEERING—See Connections, Steering

LINKS, Steering, for Fords

Balcrank—See Cincinnati Ball Crank Co.

Cincinnati Ball Crank Co., 90 North St., Cincinnati, O. "Balcrank." (See page 333.)

LINKS, Tire Chain Repair

American Auto Products Co., 1319 L St., N. W., Washington, D. C. "Klinch-Linx."

Kilborn & Bishop Co., Chapel & Lloyd Sts., New Haven, Conn.

Klinch-Linx—See American Auto Products Co.

Lightning Coupler Link Co., 1020 N. Canal St., Sharpsburg, Pa.

Mentzer & Co., J. P., 2210 S. Park Ave., Chicago, Ill.

Stolp Co., 2210 S. Park Ave., Chicago, Ill.

LINOLEUM

(For covering Floor and Running Boards)

American Linoleum Mfg. Co., 366 Fifth Ave., New York, N. Y. "Wild's."

Armstrong Cork Co., 124 23d St., Pittsburgh, Pa. (See page 449.)

Blabon Co., Geo. W., 21st St. & Hunting Park Ave., Philadelphia, Pa.

Cook's Linoleum Co., E. State St., Trenton, N. J.

Lin-Rhuber—See Sloane, W. & J.

Monarch Linoleum & Rug Co., Bulletin Bldg., Philadelphia, Pa.

Nairn Linoleum Co.—See Sloane, W. & J.

Potter Sons & Co., Thomas, Second St. & Erie Ave., Philadelphia, Pa.

Ringwalt Linoleum Works, 290 Fifth Ave., New York, N. Y.

Sloane, W. & J., 575 Fifth Ave., New York, N. Y. (Sole Distributors for Nairn Linoleum Co., Newark, N. J.) "Lin-Rhuber." (See page 579.)

Wild's—See American Linoleum Mfg. Co.

LINOLEUM CEMENT—See Cement, Linoleum

LIQUID GLUE, AIRPLANE—See Glue, Airplane Liquid

LIQUIDS, PRIMING—See Fluids, Priming

LOAD GOVERNORS—See Meters, Truck Load Indicating

LOAD INDICATING METERS—See Meters, Truck Load Indicating

LOADERS, Grease Gun

Colson, H. H., 3225 Dickens Ave., Chicago, Ill. "Handy."

Edmund, W. H., 425 E. Preston St., Baltimore, Md.

Handy—See Colson, H. H.

Straitlyne Filler Co., 847 University Ave., Berkeley, Cal.

LOADERS, Truck

Haiss Mfg. Co., George, 141st St. & Park Ave., New York, N. Y.

Lee Loader & Body Co., 2323 S. La Salle St., Chicago, Ill. (See page 1003.)

Link-Belt Co., Indianapolis, Ind. (See page 235.)

Revolvator Co., Jersey City, N. J.

LOCK NUTS—See Nuts, Lock

LOCK SWITCHES—See Switches, Lock

LOCK SWITCHES FOR FORDS — See Locks, Switch and Coil

LOCK VALVES — See Valves, Gasoline Lock

LOCK WASHERS—See Nuts and Washers, Lock

LOCKERS, Metal Clothes

All-Steel-Equip Co., 150 John St., Aurora, Ill.

Berger Mfg. Co., 1038 Belden Ave., N. E., Canton, O. "Berloy."

Bergmann Mfg. Co., 152 N. Eleventh St., Philadelphia Pa. "Columbia."

Berloy—See Berger Mfg. Co.

Buffalo Wire Works Co., 481 Terrace, Buffalo, N. Y.

Columbia—See Bergmann Mfg. Co.

Darby & Sons Co., Edward, 412 N. 18th St., Philadelphia, Pa. "Pen-Dar."

Dexter Metal Mfg. Co., Front & Arch Sts., Camden, N. J.

Dunham Co., Thos., Aurora, Ill. "Equipto." (See page 167.)

Durand Steel Locker Co., 1599 Ft. Dearborn Bank Bldg., Chicago, Ill. (See page 603.)

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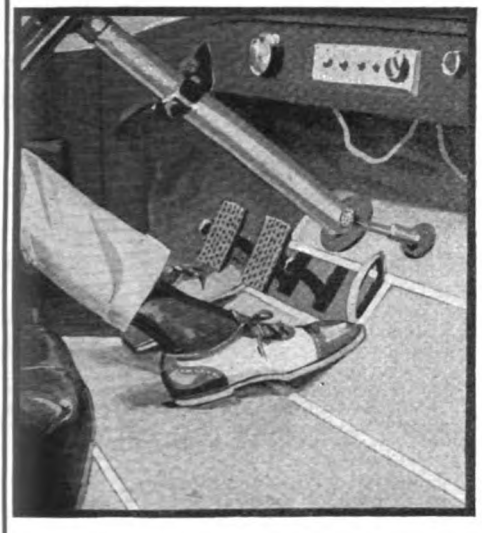

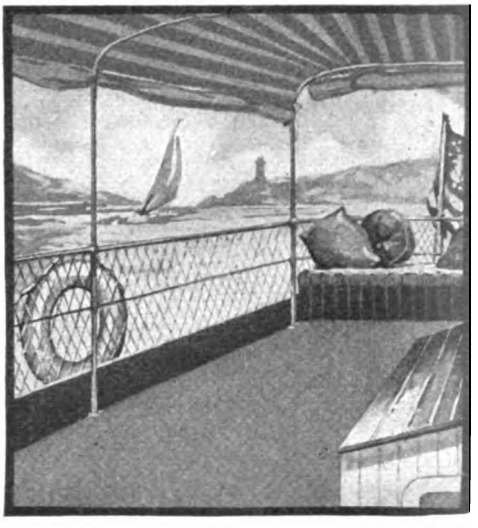

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On floors and running boards. Standard equipment for many well known makes. **Will last as long as the car.**

For Motor Boats

The trimmest covering for decks and cabin floors. Slowest to show dirt, and easiest to clean.

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NAIRN'S Made in U.S.A. REGISTERED U.S. PATENT OFF.

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Newark, N. J.

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LOCKERS, Metal Clothes (Continued)

Equipto—See Dunham Co.

Federal Steel Fixture Co., 4545 W. Homer St., Chicago, Ill.

Hart & Hutchinson Co., New Britain, Conn.

Hetts Co., Dime Bank Bldg., Detroit, Mich.

Jefferis Co., R. W., 11th & Linden Sts., Camden, N. J.

Lyon Metallic Mfg. Co., (Montgomery) Aurora, Ill.

Manufacturing, Equipment & Engineering Co., Framingham, Mass. "Mecco."

Mecco—See Manufacturing, Equipment & Engineering Co.

Medart Mfg. Co., Fred, Potomac & De Kalb Sts., St. Louis, Mo.

Pen-Dar—See Darby & Sons Co.

Shults & Co., H. H., 24 Commercial St., Gowanda, N. Y.

Terrell's Equipment Co., Hall & Hilton Sts., Grand Rapids, Mich.

Van Dorn Iron Works Co., 2685 E. 79th St., Cleveland, O.

LOCKS, Automobile

(To prevent theft of cars; for Lock Switches—See Switches, Lock; for Lock Valves—See Valves, Gasoline; for Car Door Locks—See Locks, Car Door)

A. A. Auto Lock Co., McCormick Bldg., Chicago, Ill.

Able Mfg. Co., 731-33 Folsom St., San Francisco, Cal. (See page 589.)

Automat-Co.—See Automotive Material Co.

Automotive Material Co., Chicago, Ill. "Automat-Co." (See page 1117.)

Autoloc—See Slaymaker Lock Mfg. Corp.

B & E Lock Co., 3522 Sixth Ave., Des Moines, Iowa. "Evans."

Baird Lock Co., 1426 N. Wells St., Chicago, Ill. (See page 583.)

Best Auto Lock Co., 109 Endicott Arcade, St. Paul, Minn.

Bradsto Appliances, 65 Main St., Buffalo, N. Y. "Hager."

Broderick & Bascom Rope Co., 805 N. Main St., St. Louis, Mo. "Powersteel Autowlock."

Cairwold Mfg. Co., Third & Huntingdon Sts., Philadelphia, Pa. "Snap-on."

Cammen Laboratories Co., 42 W. 39th St., New York, N. Y. "Carsafe."

Carsafe—See Cammen Laboratories Co.

Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 345.)

Christie Auto Lock Co., 6607 Dorchester Ave., Chicago, Ill.

Connecticut Telephone & Electric Co., Meriden, Conn.

de Sanno & Son, A. P., 1252 N. Broad St., Philadelphia, Pa.

Decker Co., Richard M., 2909 Indiana Ave., Chicago, Ill. (See page 587.)

Economic Mfg. Co., 5020 Montview Blvd., Denver, Colo.

Electro Depositing & Mfg. Co., 2206 Wash St., St. Louis, Mo.

Evans—See B. & E. Lock Co.

Ever-Safe Auto Lock Co., 1161 University Ave., St. Paul, Minn.

F. O. B. Mfg. Co., 520 Arch St., Philadelphia, Pa. (See page 585.)

Fer-O-Lock—See Ferro Mfg. Co.

Ferro Mfg. Co., 2011 Michigan Ave., Chicago, Ill. "Fer-O-Lok." (See page 1197.)

General Utility Co., 1326-30 Ogden St., Philadelphia, Pa. "Parker."

Goodrich-Lenhart Mfg. Co., Hamburg, Pa. (See page 721.)

Gray Lock Co., 2604 Ninth Ave., Oakland, Cal.

Green Lock Co., 418 Lightener Bldg., Detroit, Mich. (See pages 581 and 582.)

H-R Mfg. Co., 1926 S. Wabash Ave., Chicago, Ill. "Neutralock."

Hager—See Bradsto Appliances.

Handee—See Racine Handy Mfg. Co.

Hays, R. A., 70 E. 22d St., Chicago, Ill. (Factory Representative for Security Mfg. Co., Los Angeles, Cal.)

Hershey Mfg. Co.—See Simplex Corp.

Hillburg Transmission Lock Co., Island Ave., McKees Rocks, Pa.

Hugro Mfg. Co., Warsaw, Ind. "Liberty."

International Accessories Corp., 65 Main St., Buffalo, N. Y. "Yell-O-Gard."

Jensen, George C., 258 First St., San Francisco, Cal.

Johnson Automobile Lock Co., 2300 Archer Ave., Chicago, Ill. (See page 585.)

K. & S. Auto Heater & Lock Co., 3357 S. Michigan Ave., Chicago, Ill. (See page 497.)

Karlok—See Russell Sales Co.

Keeno Keyless Lock Co., 2037 S. Wabash Ave., Chicago, Ill.

King Mfg. Co., 3537 S. Broadway, Denver, Colo.

Liberty—See Hugro Mfg. Co.

Liberty Auto Lock Co., 2032 Michigan Ave., Chicago, Ill.

Loxit—See Motor Parts Co.

Lucia Mfg. Co., 32 Union Pl., Hartford, Conn. (See page 601.)

McCoy Auto Lock Co., Race St., Lockport, N. Y.

Monarch Auto Lock Co., 361 Market St., Kenosha, Wis.

Motor Car Specialty Co., Tenth & Diamond Sts., Philadelphia, Pa.

Motor Parts Co., Ambridge, Pa. "Loxit."

Neutralock—See H-R Mfg. Co.

North Side Buick Sales Co., 918-26 Sheridan Rd., Chicago, Ill.

Nulock Mfg. Corp., 1639 Broadway, New York, N. Y.

Parker—See General Utility Co.

Paul Auto Combination Lock Co., Detroit, Mich. (See page 589.)

Perry Auto Lock Co., 2635 Michigan Ave., Chicago, Ill. (See page 593.)

Powersteel Autowlock—See Broderick & Bascom Rope Co.

Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."

Relco—See Reliance Co.

Reliance Co., 411-17 S. Sangamon St., Chicago, Ill. "Relco." (See page 591.)

Rochester Safety Lock Co., 530 Main St., Rochester, Ind.

Rush—See Thomas-Andrews Corp.

Russell Sales Co., 554 Broad St., Newark, N. J. "Karlok."

Secret Service—See Worcester Auto Lock Co

Security Mfg. Co.—See Hays, R. A.

Sheppard & Co., J. E., 54 Commercial St., Worcester, Mass.

Simplex Corp., 2214 S. Michigan Ave., Chicago, Ill. (Sales Department for Hershey Mfg. Co., Chicago, Ill. "Theftproof.") (See page 869.)

Slaymaker Lock Co., 308-70 First St., Lancaster, Pa. "Autoloc."

Snap-On—See Cairwold Mfg. Co.

Stewart Mfg. Co., Inc., Oakland, Cal. (See page 1119.)

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THE GREEN LOCK

The handsome Display Board sells Green Locks automatically. The certain protection is evident to every driver—it is only necessary to display Green Locks to sell them.

Fully Protected by Patents

See Jobber's Proposition Next Page

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THE GREEN LOCK

Makes a Policeman of Every Passerby

Placed in the most conspicuous position possible on the right front wheel of the car and painted a brilliant lasting green—thieves do not tamper with the Green Lock. They cannot without every spectator knowing it.

Note the Spoke Grip!

The Green Lock fastens firmly around the wheel and also to the spoke of the car. It is impossible to move it on the wheel without unlocking it. The Green Lock is unbreakable and is equipped with a new non-pickable lock. It is the lowest priced lock offered which affords complete protection.

Jobbers—Write for Proposition

Green Locks are marketed through the jobber to the dealer. List the Green Lock in your catalog—we will furnish electrotypes or complete inserts in color, if desired. We will back you up with dealer literature and with advertising direct to the dealer and consumer, and furnish display boards for the dealers' use.

Write TODAY for prices and discounts

See the Display Board
Pictured on Preceding Page

The Green Lock Company
418 Lightner Bldg. - - - Detroit

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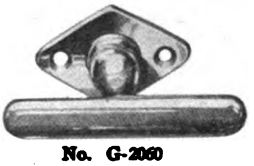
Automobile Body Hardware

Knowledge of the body builders requirements, and ability to meet those requirements has won us the business of the majority of body builders.



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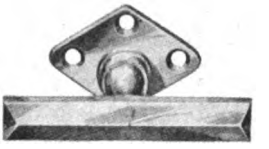

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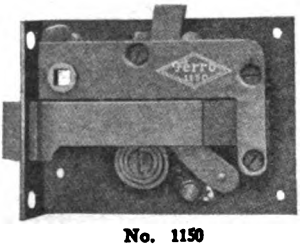

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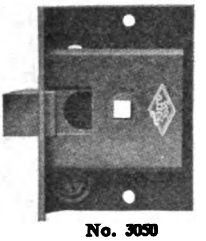

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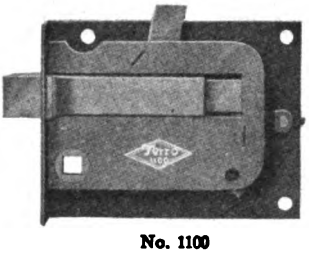

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Detroit, Michigan

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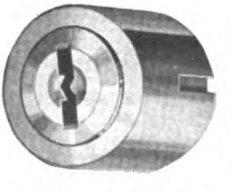
Baird Pillar & Door Locks

Have Features Superior to All Others

Write for Sample and Bulletin

BAIRD CYLINDER LOCKS
For Auto Locking Devices

Have Exceptional Merits



We have the most up-to-date Lock Factory in the world

BAIRD LOCKS BAIRD

BAIRD LOCK CO. 1424 N. WELLS ST. CHICAGO.

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LOCKS, Automobile (Continued)

Terry-McCluskey Auto Lock Co., 1831 Berteau Ave., Chicago, Ill.

Theftproof—See Simplex Corp.

Thomas-Andrews Corp., Waukegan, Ill. "Rush." (See page 723.)

Trosien, Charles G., 108 Franklin Blvd., Pontiac, Mich.

USA—See Universal Safety Appliance Corp.

Universal Safety Appliance Corp., 414 E. Lexington Ave., Baltimore, Md. "USA."

Walker Motor Car Specialties Co., 301-03 13th St., Oakland, Cal.

Western Metal Specialty Co., 1919 St. Paul Ave., Milwaukee, Wis.

Worcester Auto Lock Co., 104 Fifth Ave., New York, N. Y. "Secret Service."

Yell-O-Gard—See International Accessories Corp.

LOCKS, BOX—See Locks, Cabinet

LOCKS, Cabinet and Pad

B-A-R—See Iowa Lock & Mfg. Co.

Baird Lock Co., 1426 N. Wells St., Chicago, Ill. (See page 583.)

Chicago Cabinet Lock Co., 3341 N. Lincoln St., Chicago, Ill. (See page 585.)

Corbin Cabinet Lock Co., New Britain, Conn.

Eagle Lock Co., 105 Chambers St., New York, N. Y.

Fraim Lock Co., E. T., Park Ave. & Jefferson St., Lancaster, Pa.

Iowa Lock & Mfg. Co., Tama Bldg., Burlington, Iowa. "B-A-R."

Junkunc Bros., 1145 W. Gaarfield Blvd., Chicago, Ill.

King Lock Co., 319 W. Ohio St., Chicago, Ill. (See page 593.)

Miller Lock Co., 4518 Tacony St., Philadelphia, Pa.

Sargent & Co., Water & Wallace Sts., New Haven, Conn.

Slaymaker Lock Co., 808-70 First St., Lancaster, Pa.

Yale & Towne Mfg. Co., Stamford, Conn. (See page 935.)

LOCKS, Car Door

American Brass Novelty Co., Grand Haven, Mich.

Baird Lock Co., 1426 N. Wells St., Chicago, Ill. (See page 583.)

Chicago Cabinet Lock Co., 3341 N. Lincoln St., Chicago, Ill. (See page 585.)

Cowles & Co., C., New Haven, Conn. (See page 651.)

Delphie Specialty Mfg. Co., 435-37 E. Willis Ave., Detroit, Mich.

Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.

E. V. B. Mfg. Co., 342 York St., New Haven, Conn.

Eberhard Mfg. Co., 2784 Tennyson Rd., Cleveland, O.

English & Mersick Co., New Haven, Conn. (See pages 623 and 783.)

Ferro Stamping & Mfg. Co., Detroit, Mich. (See page 583.)

Hancock Mfg. Co., 802 E. Henry St., Charlotte, Mich.

Keeno Keyless Lock Co., 2037 S. Wabash Ave., Chicago, Ill.

McKinney Mfg. Co., Liverpool & Metropolitan Sts., Pittsburgh, Pa.

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

Mitchell Specialty Co., 3631 N. Smedley St., Philadelphia, Pa.

National Seal Co., 147 41st St., Bush Terminal, Brooklyn, N. Y.

Ochsner & Sons Co., A., 1060 State St., New Haven, Conn.

Parsons Mfg. Co., 5301-47 Bellevue Ave., Detroit, Mich.

Slaymaker Lock Co., 808-70 First St., Lancaster, Pa.

Smith & Co., Jos. N. 2461-91 E. Grand Blvd., Detroit, Mich.

Ternstedt Mfg. Co., Artillery & Muster Aves., Detroit, Mich. (See page 799.)

Variety Mfg. Co., 3958 Carroll Ave., Chicago, Ill.

Woodruff & Sons Co., Walter W., Mount Carmel, Conn.

LOCKS, CHAIN—See Locks, Tire Chain

LOCKS, CRANK, FOR FORDS—See Locks, Starting Crank

LOCKS, DEMOUNTABLE RIM—See Bolts, Special Demountable Rim

LOCKS, DOOR—See Locks, Car Door

LOCKS, Emergency Gear Lever for Fords

Worthington, A. P., 700 N. Main St., Los Angeles, Cal.

LOCKS, Manifold

Fallon Machinery Co., 31 Marshall's Wharf, Lynn, Mass.

LOCKS, Motorcycle

A-K—See Angsten-Kox Co

Angsten-Kox Co., 221-23 W. Randolph St., Chicago, Ill. "A-K."

LOCKS, NUT—See Nuts, Lock

LOCKS, PAD—See Locks, Cabinet

LOCKS, Pedal, for Fords

(For locking clutch pedal in neutral or brake pedal in on position)

E. T. Auto Lock Co., 1015 Grand Ave., Des Moines, Iowa.

Geiser Bros., 1917 Fairmount Ave., Cincinnati, O.

Lee Hardware Co., Salina, Kans.

Rischmuller Mfg. Co., 3442 19th St., San Francisco, Cal.

LOCKS, Radiator Cap and Thermometer

Barcy-Nicholson Co., 2801-19 W. Fort St., Detroit, Mich. "Weed."

McAdams Sales Co., J. C., 51 E. 42d St., New York, N. Y. "Schlaich." (See page 565.)

Schlaich—See McAdams Sales Co.

Smith Co., O. P., 205 W. Harrison St., Chicago, Ill.

Weed—See Barcy-Nicholson Co.

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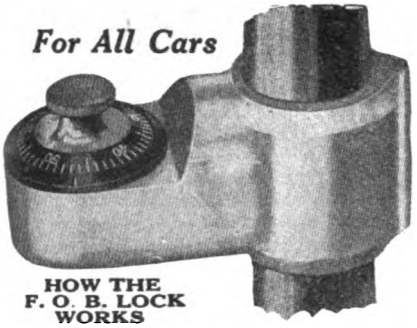
F. O. B. COMBINATION AUTOMOBILE LOCKS

For All Cars



HOW THE F. O. B. LOCK WORKS

The F. O. B. Lock is made of chrome aluminum alloy. Every part is carefully machined to establish tolerance limits under the most rigid inspection and supervision. When attached it becomes an integral part of the steering system, being located a few inches below the steering wheel.

At the outer end is the combination dial, exactly like the dials used on vault doors. When the dial is turned, a direct action locking device causes a steel bolt to engage the steering column, effectually locking the entire steering system in a rigid position.

The lock has a combination as easy to remember as your own telephone number. Turning the dial to the right numbers withdraws the bolt and the steering gear is again free to operate.

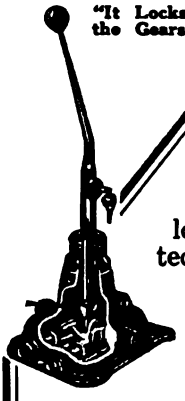
100% PROTECTION AT ALL TIMES

CAR MANUFACTURERS ATTENTION:

Specially designed models will be submitted for meeting standard equipment requirements at your request.

F. O. B. MFG. CO., Inc.

520 Arch Street Philadelphia, Pa.



"It Locks the Gears"

Johnson Transmission Lock

A real *thief* proof lock that fully protects unattended cars.

Endorsed by Underwriters

A gear shifting lever fitted with a locking device—locks with Yale key. Made for

Auburn	Chandler	Oakland
Buick	Dodge	Oldsmobile
Cadillac	Haynes	Roamer
Case	Gardner	Westcott

Durable—Simple—Safe

Easy to Install

Saves 15% on Theft Insurance

JOHNSON AUTOMOBILE LOCK CO

2309 Archer Ave., Chicago, Ill.

Cylinder Locks

PILLAR LOCK FOR CLOSED BODIES No. 850

Anti-Theft Steering Wheel Transmission Locks

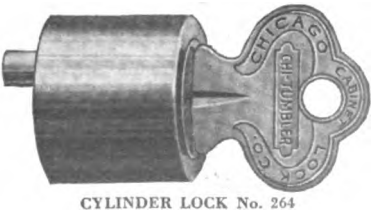
Also Hook Tumbler Locks for Automobile Doors, Pillars, Compartments, Cabinets, etc.

No springs—easier to operate—simple, strong, positive.

Easy to install—smooth operation.

Locks supplied direct to the manufacturer and user in large quantities at attractive prices.

Write for description, samples and prices, stating your requirements.



CYLINDER LOCK No. 264

Chicago Cabinet Lock Co.

3341 North Lincoln St. Chicago, Ill.

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LOCKS, Robe

Backus Novelty Co., 901 Water St., Smethport, Pa.

Handee—See Racine Handy Mfg. Co.

Kap Mfg. Co., 281 Natoma St., San Francisco, Cal.

Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."

LOCKS, Spare Tire

Able Mfg. Co., 731-33 Folsom St., San Francisco, Cal. (See page 589.)

American Chain Co., Bridgeport, Conn. (See page 535.)

Banner Accessory Mfg. Co., St. Louis, Mo. (See page 601.)

Bantlin Co., Julius J., Cincinnati, O. "Hoover." (See page 505.)

Boston Leather Specialties, 30 Merrimac St., Boston, Mass.

Brookins Mfg. Co., Dayton, O.

Cleveland Chain & Mfg. Co., Cleveland, O.

Edstrom Machinery Co., Cary, Ill. "Kant Kink." (See page 1175.)

Esco Mfg. Co., 228 Farnsworth St., Detroit, Mich.

Fischer & Hayes Rope & Steel Co., 741-45 W. Van Buren St., Chicago, Ill. (See page 1005.)

G-H—See Gray-Hawley Mfg. Co.

Gray-Hawley Mfg. Co., 3123-31 Jefferson Ave., E., Detroit, Mich. "G-H."

Hodes-Zink Mfg. Co., 312 W. State St., Fremont, O. "Sure-Fit."

Hoover—See Bantlin Co.

Hughes-Mellins—See M. & H. Novelty Co.

Johnson Automobile Lock Co., 2309 Archer Ave., Chicago, Ill. (See page 585.)

Kant Kink—See Edstrom Machinery Co.

McKinnon Dash Co., Buffalo, N. Y. (See page 831.)

M & H Novelty Co., 1468 W. 28th St., Los Angeles, Cal. "Hughes-Mellins." (See page 399.)

Roberts & Monroe, 35 Warren St., New York, N. Y. "Romon Kabulock." (See page 359.)

Romon Kabulock—See Roberts & Monroe.

Sargent & Greenleaf, 178 Court St., Rochester, N. Y.

Sure-Fit—See Hodes-Zink Mfg. Co.

Upson-Walton Co., 1310 W. 11th St., Cleveland, O. "U. W." (See page 1105.)

U. W.—See Upson-Walton Co.

LOCKS, Spark and Throttle Lever, for Fords

(For locking spark and throttle levers in fully advanced or retarded position)

Adams, Alden L., 18 Ormond St., Springfield, Mass.

B. & E. Lock Co., 3522 Sixth Ave., Des Moines, Iowa. "Evans."

Backus Novelty Co., 901 Water St., Smethport, Pa. "Utility."

Evans—See B. & E. Lock Co.

Fordloc—See Slaymaker Lock Co.

Handee—See Racine Handy Mfg. Co.

Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."

Slaymaker Lock Co., 308-70 First St., Lancaster, Pa. "Fordloc."

Sturr Auto Lock Co., 9 View Pl. (Mt. Auburn), Cincinnati, O.

Utility—See Backus Novelty Co.

LOCKS, Starting Crank, for Fords

(For locking starting crank in such a position that it can not be engaged or used)

Handee—See Racine Handy Mfg. Co.

Kranklock—See Oakes Co.

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)

Oakes Co., Indianapolis, Ind. "Kranklock." (See page 405.)

Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."

LOCKS, Steering Gear, for Fords

(For locking steering gear or steering wheel in a manner to prevent the turning of front wheels or steering of car)

Bull Dog—See Hugro Mfg. Co.

C. M. & D.—See Chicago Mfg. & Distributing Co.

Chicago Mfg. & Distributing Co., 411 S. Sangamon St., Chicago, Ill. "C. M. & D."

Decker Co., Richard M., 2909 Indiana Ave., Chicago, Ill. (See page 587.)

Defender Auto-Lock Co., 216-22 Locust St., Allegan, Mich.

Fer-O-Lock—See Ferro Mfg. Co.

Ferro Mfg. Co., 2011 Michigan Ave., Chicago, Ill. "Fer-O-Lock." (See page 1197.)

Fox Automotive Products Corp., 4700 N. 18th St., Philadelphia, Pa.

Goodrich-Lenhart Mfg. Co., Hamburg, Pa. (See page 721.)

H-R Mfg. Co., 1926 S. Wabash Ave., Chicago, Ill. "Wheelock."

Hart & Co., Boston, Mass.

Hershey Mfg. Co.—See Simplex Corp.

Hugro Mfg. Co., Warsaw, Ind. "Bull Dog."

Junkunc Bros., 1145 W. Garfield Blvd., Chicago, Ill.

Keeno Keyless Lock Co., 2037 S. Wabash Ave., Chicago, Ill.

King Mfg. Co., 3537 S. Broadway, Denver, Colo.

Lazear Auto Lock Wheel Co., 559 W. Quincy St., Chicago, Ill.

Leland Lock Co., Ford Bldg., Detroit, Mich.

Liberty Auto Lock Co., 2023 Michigan Ave., Chicago, Ill.

Masters Mfg. Co., 66 Woolsey Sq. (Jamaica Plain), Boston, Mass.

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

Moss—See Paul Auto Combination Lock Co.

Mudd Auto Lock Co., 118-24 S. Clinton St., Chicago, Ill. "Rajo."

Mueller—See Reliance Co.

Neville Steering Wheel & Mfg. Co., 602 Norris St., Wayne, Mich. (See page 1135.)

Paul Auto Combination Lock Co., 1118 Gratiot Ave., Detroit, Mich. "Moss." (See page 589.)

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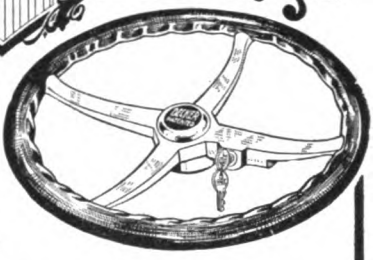
DECKER LOCK-STEERING WHEEL

For Ford, Dodge Chevrolet 490 Maxwell and Overland 4 Cars



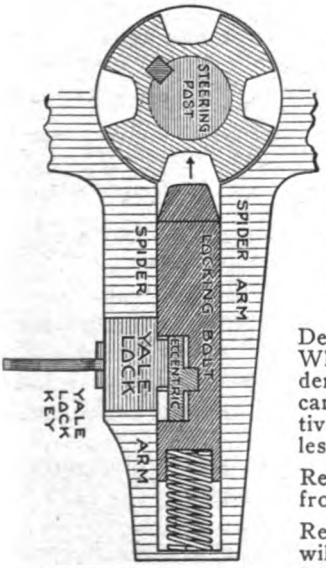
Approved by Underwriters' Laboratories

FORD DESIGN **OTHER MAKES DESIGN**

A strikingly handsome steering wheel with a built-in lock that is correct in principle, simple in construction and faultless in operation.

Oversize wheel—17"—increases steering ease and driving control from thirty-three and one-third to fifty percent.

You should know beyond the question of a doubt that the steering wheel lock you recommend and sell positively gives maximum theft protection and is absolutely safe to drive with.



Free or Spinning Position

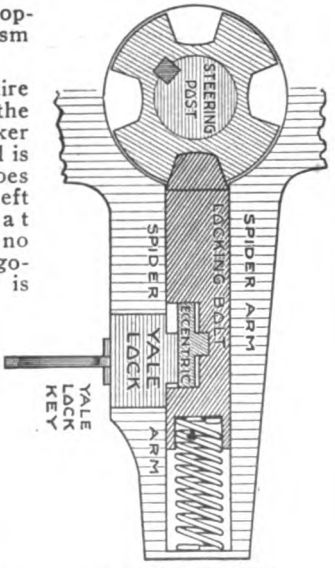
Study illustration of operating mechanism shown herewith.

Prove to your entire satisfaction that the principle of the Decker Lock-Steering Wheel is correct, therefore, does offer the limit of theft protection and that there is absolutely no chance of anything going wrong while car is being driven.

Decker Lock-Steering Wheels Aluminum Spider Models dress up the car. They are distinctive in design and faultlessly finished.

Retail prices range from $7.50 to $15.00.

Representative jobbers will be pleased to serve you.



Driving Position

Write us for catalog, advertising matter and dealers' selling helps.

RICHARD M. DECKER COMPANY

2907 Indiana Avenue, :: :: CHICAGO, ILLINOIS

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LOCKS, Steering Gear, for Fords (Continued)

Permu—See Whittington Mfg. Co.

Perry Auto Lock Co., 2635 Michigan Ave., Chicago, Ill. (See page 593.)

Rajo—See Mudd Auto Lock Co.

Reliance Co., 411-17 S. Sangamon St., Chicago, Ill. "Safegard," "Mueller." (See page 591.)

Safegard—See Reliance Co.

Security Auto Lock Co., 410 N. Paulina St., Chicago, Ill.

Simplex Corp., 2214 S. Michigan Ave., Chicago, Ill. (Sales Department for Hershey Mfg. Co., Chicago, Ill. "Theftproof.") (See page 869.)

Stop Thief Auto Lock Co., Birmingham, Ala.

Theftproof—See Simplex Corp.

Victor Auto-Lock Co., 55 Bates St., Detroit, Mich. (See page 591.)

Wheelock—See H-R Mfg. Co.

Whittington Mfg. Co., Montrose, Pa. "Permu."

LOCKS, SWITCH—See Switches, Electric Lock

LOCKS, Switch and Coil, for Fords

(Lock for Ignition Switches and Coil Boxes to prevent unauthorized use of car)

Autolock—See K-W Ignition Co.

Christie Auto Lock Co., 6607 Dorchester Ave., Chicago, Ill.

Cleveland Accessories Co., 705 St. Clair Ave., N. W., Cleveland, O.

Cumming-Forstner Corp., 230 S. State St., Chicago, Ill. "Walker Ke-Lee."

Goodrich-Lenhart Mfg. Co., Hamburg, Pa. (See page 721.)

Jitlock—See Metal Specialties Co.

K-W Ignition Co., 2900 Chester Ave., Cleveland, O. "Autolock." (See page 621.)

Kap Mfg. Co., 281 Natoma St., San Francisco, Cal.

Marvel Accessories Mfg. Co., 1220 W. Sixth St., Cleveland, O.

Sandell Switch Lock Co., 190 Pearl St., Hartford, Conn.

Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 507.)

Syracuse Universal Mfg. Co., 325-27 W. Fayette St., Syracuse, N. Y.

Temco Electric Motor Co., 921 Sugar St., Leipsic, O.

Walker Ke-Lee—See Cumming-Forstner Corp.

LOCKS, THROTTLE LEVER, FOR FORDS —See Locks, Spark and Throttle Lever

LOCKS, TIRE—See Locks, Spare Tire

LOCKS, THERMOMETER — See Locks, Radiator Cap and Thermometer

LOCKS, Tire Chain

(To prevent the possibility of loss of tire chain through clasp opening up)

Badger Mfg. Corp., Milwaukee, Wis. "Saf-Lock." (See page 173.)

Saf-Lock—See Badger Mfg. Corp.

Smith Mfg. Co., F. A., Rochester, N. Y. (See page 293.)

LOCKS, Transmission for Fords

Everloc—See Wood Co.

Lowery Lock Co.—See Wright Accessories Corp.

Motorgrip—See Wright Accessories Co.

Wood Co., W. C., 105-07 Western Ave., Minneapolis, Minn. "Everloc."

Wright Accessories Corp., Atlanta, Ga. (Sales Department for Lowery Lock Co., Atlanta, Ga. "Motorgrip.")

LOGS, Motor Boat Shaft

List Mfg. Co., E. J., Havana, Ill.

LOOPS, Brass Snap and Strap

(See also Fittings, Top)

Anchor—See North & Judd Mfg. Co.

Attwood Brass Works, Grand Rapids, Mich. (See page 1195.)

Auto-Vehicle Parts Co., 3301 Colerain Ave., Cincinnati, O. "Auveco."

Auveco—See Auto Vehicle Parts Co.

Cowles & Co., C., New Haven, Conn. (See page 651.)

Desoco—See Detroit Socket Co.

Detroit Socket Co., 2744 W. Jefferson Ave., Detroit, Mich. "Desoco."

Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.

Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.

Jonah & George, Little's Ct., Merrimac, Mass.

Metal Stamping Co., 13th St. & East Ave., Long Island, N. Y.

Neider Co., F. A., Augusta, Ky.

North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn. "Anchor."

O'Brien Mfg. Co., Joseph F., 391 Broadway, New York, N. Y.

Rostand Mfg. Co., Milford, Conn.

Shepard Art Metal Co., Detroit, Mich. (See page 515.)

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

Woodruff & Sons Co., Walter W., Mount Carmel, Conn.

LOOSE LEAF BOOKS—See Books, Accounting and Cost System

LOOSENERS, TIRE—See Tools, Tire

LOUVRE FORMING MACHINES—See Machines, Louvre Forming

LOW OIL ALARMS—See Alarms, Low Oil

LOW WATER ALARMS—See Columns, Water

LOWERING FITTINGS FOR FORDS—See Fittings, Car Lowering

LUBRICANTS, Cutting

Acme—See Swan & Finch Co.

American Oil Corp., S. Water St., Jackson, Mich. "Minlardo."

Ajax—See Phoenix Oil Co.

Cascade—See Swan & Finch Co.

Connecticut Oil Co., 549 S. Leonard St., Waterbury, Conn.

Cut-Rite—See Phoenix Oil Co.

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The One Theft-Proof, Self-Lighting AUTO COMBINATION LOCK

Made in five models, to fit any Automobile.
In working principle as secure as the lock of a bank vault; in construction much stronger and absolutely proof against the car theft.

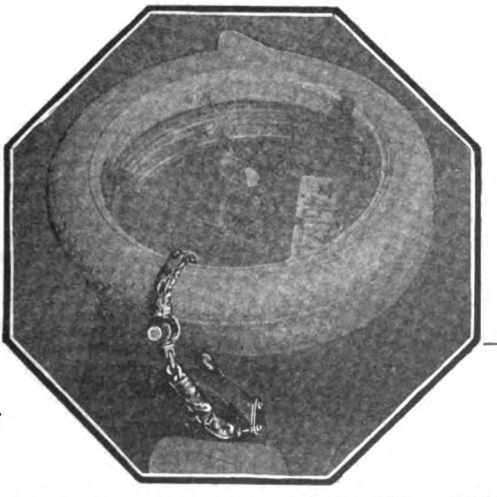
Sold as complete steering wheel unit comprising a corrugated rim of select wood mounted on a polished aluminum spider, with the locking mechanism in the center.

The lines and figures of the combination-lock dial are filled in with Tuma Radium which illuminates the dial so that it can be operated at night.

The Paul Auto Combination Lock needs no key; it cannot get out of order; operates quickly; is easily attached to any car; can be operated in the dark; the combination can be changed hundreds of times giving different readings.

We still have some territory proposition for exclusive selling right
Dealers, Write for Particulars.

PAUL AUTO COMBINATION LOCK COMPANY
1118 Gratiot Avenue, Detroit, Mich.



EVERY COMBINATION DIFFERENT

MADE OF SPECIAL STEEL

THE ABLE *COMBINATION* SPARE TIRE LOCK

Positive protection—no lock to pick, no key to lose or forget. Quickly and easily locked and unlocked by owner, day and night, by sight or sound. Attractively finished and leather bound. Nationally advertised. Officially approved by Underwriters' Laboratories. Opportunities for dealers and distributors, write

ABLE MFG. CO., 731-33 FOLSOM ST., SAN FRANCISCO, CAL.
EASTERN OFFICE: ROOM 835, 140 SO. DEARBORN ST., CHICAGO, ILL.
Also Manufacturers of Able Combination Auto Lock

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LUBRICANTS, Cutting (Continued)

Damascus Mfg. Co., 9501 Cassius Ave., Cleveland, O.

Dearborn Chemical Co., 232 S. Michigan Ave., Chicago, Ill.

Detroit Soluble Oil Co., Beard & M. C. R. R., Detroit, Mich. "Kool-Kut," "Samson."

Drilline—See Krembs & Co.

Eastern Oil Co., 822 Champlain Ave., Cleveland, O.

Economy—See White & Bagley Co.

Fileine—See Houghton & Co.

Green Oil Soap Co., 166-72 N. Curtis St., Chicago, Ill.

Houghtolard—See Houghton & Co.

Houghton & Co., E. F., 240 W. Somerset St., Philadelphia, Pa. "Fileine," "Houghtolard."

Keep-Kool—See Phoenix Oil Co.

Keystone Oil & Mfg. Co., 111 N. Market St., Chicago, Ill. "Sulpho."

Kool-Kut—See Detroit Soluble Oil Co.

Krembs & Co., 178 N. Green St., Chicago, Ill. "Drilline."

Lardo—See World Oil Products Co.

Lindsay, McMillan Co., 242 Broadway, Milwaukee, Wis. "Mac Lin's."

Lube-Well—See Richards, G. Whitfield.

Mac Lin's—See Lindsay, McMillan Co.

Middle State Oil Co., Engineers Bldg., Cleveland, O. "Perfection."

Minlardo—See American Oil Corp.

Minolard—See White & Bagley Co.

Mystic—See Swan & Finch Co.

Oakite—See Oakley Chemical Co.

Oakley Chemical Co., 22 Thames St., New York, N. Y. "Oakite."

Oil City Oil & Grease Co., Seneca St., Oil City, Pa. "Pennzoil."

Panama Lubricants Co., 2624 Santa Fe Ave., Los Angeles, Cal.

Panhard Oil Corp., 395 Broadway, New York, N. Y.

Pennzoil—See Oil City Oil & Grease Co.

Perfection—See Middle States Oil Co.

Phoenix Oil Co., 2554 W. Fifth St., Cleveland, O. "Ajax," "Cut-rite," "Keep-Kool."

Rhodes & Co., James H., 513 W. Austin Ave., Chicago, Ill. "Solvene."

Richards, G. Whitfield, 1732 Carlton St., Philadelphia, Pa. "Lube-Well."

Samson—See Detroit Soluble Oil Co.

Solvene—See Rhodes & Co.

Sullivan Oil Co., 413 N. Wells St., Chicago, Ill.

Sulpho—See Keystone Oil & Mfg. Co.

Waverly Oil Works Co., Pittsburgh, Pa. (See page 663.)

White & Bagley Co., Worcester, Mass. (See page 663.)

World Oil Products Co., 1426 Seneca St., Buffalo, N. Y. "Lardo."

LUBRICANTS, Spring

Halstead Specialties Co., San Francisco, Cal. "Spring-Eez." (See page 382.)

Johnson & Son, S. C., 1012 16th St., Racine, Wis.

Never Rust—See Strater, J. Edward.

Spring-Eez—See Halstead Specialties Co.

Strater, J. Edward, 2060 Euclid Ave., Cleveland, O. "Never Rust."

Thomson Auto Specialties Co., 36-38 E. Chestnut St., Columbus, O.

LUBRICATING GRAPHITE—See Graphite, Lubricating

LUBRICATING GREASE—See Cups, Oil and Grease.

LUBRICATING OILS—See Oils, Lubricating; also Cups, Oil and Grease

LUBRICATING SPRING STRIPS — See Strips, Spring Leaf Lubricating

LUBRICATING SYSTEMS—See Systems, Chassis Lubricating

LUBRICATOR BELTS—See Belts, Endless Fabric; also Belts, Spiral Wire

LUBRICATOR WICKING—See Wicking, Felt Lubricator

LUBRICATORS, BOLT—See Lubricators, Spring and Shackle Bolt

LUBRICATORS, CHASSIS—See Systems, Chassis Lubricating

LUBRICATORS, Cup Cylinder

(For feeding Graphite to cylinders)

Buettner Co., Charles H., Cincinnati, O.

Woolf Graphite Lubricator Co., 3624 Ames Ave., Omaha, Neb.

LUBRICATORS, FORCE FEED—See Lubricators, Motor Boat Force Feed; also Lubricators, Tractor Force Feed

LUBRICATORS, GRAVITY — See Lubricators, Motor Boat Gravity

LUBRICATORS, HAND—See Lubricators or Oil Pumps, Hand

LUBRICATORS, MECHANICAL—See Lubricators or Oil Pumps, Mechanical

LUBRICATORS, Motor Boat Force Feed

American Injector Co., 1469 14th Ave., Detroit, Mich. "Explo," "Surefeed."

Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for "McCord" Lubricators.) (See page 125.)

Explo—See American Injector Co.

McCord Mfg. Co., Detroit, Mich. (See pages 784 and 785.)

Manzel Bros., 309 Beard Ave., Buffalo, N. Y.

Pedersen Lubricator Co., 630 First Ave., New York, N. Y.

Surefeed—See American Injector Co.

LUBRICATORS, Motor Boat Gravity

Pedersen Lubricator Co., 636 First Ave., New York, N. Y.

LUBRICATORS, OIL AND GREASE CUP—See Cups, Oil and Grease

LUBRICATORS, Pressure

(Operated by exhaust pressure)

Pedersen Lubricator Co., 636 First Ave., New York, N. Y.

W. H. Oil Saving Co., Lewiston, Idaho.

Wilkinson Co., Wm H., Main St., West Medway, Mass.

LUBRICATORS, SHACKLE BOLT—See Lubricators, Spring and Shackle Bolt

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VICTOR

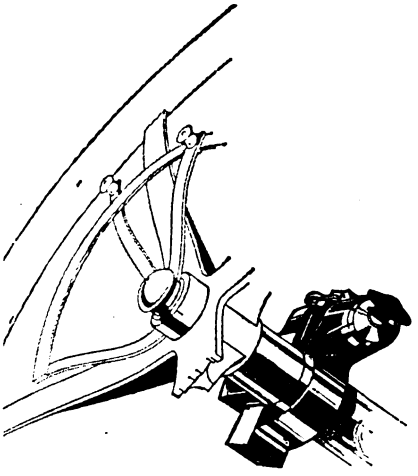
Steering Wheel Locks
Fit any Ford Car
Simple, Fool Proof
Easily Installed

MODEL H
Rigid Wheel Type
Eight locking positions which lock the front wheel in any position. When locked the car cannot be towed. It complies with Fire and Police Ordinances.

MODEL J
Loose Wheel Type
Locks the Gears out of mesh. A heat-treated steel plate fits under pinion gear which absolutely prevents the gears from being hammered into mesh.

All Victor Locks have Special Underwriters' Laboratories Labels.

Victor Auto-Lock Company
55 Bates Street Detroit



Theftproof Auto Lock

Approved by Underwriters—reduces cost theft insurance 15%.
Simple — positive — convenient. Installed by any mechanic in 20 minutes. For all cars except Fords and Maxwells.

HERSHEY MFG. CO.
28 E. Jackson Blvd. Chicago, Ill. — Equitable Bldg. Denver, Colo.

"RELCO"

LOCK STEERING WHEEL

Approved by Underwriters Laboratories

"THE ULTIMATE AUTOMOBILE LOCK"
Furnished ready to install for all cars.
Middle West Territory.....$15.00
Pacific and Atlantic Coast Territory... 17.50
"MUELLER" SPECIAL FOR FORD CARS—PRICE $6.00 EACH.

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Mr. Louis D'Eyraud, 452-56 W. 16th St., Los Angeles, California.
Mr. Chas. A. Barker, 322 Mills St., El Paso, Texas.
Stronghold Rubber Co., No. Ervay & Akard Sts. at Ross Ave., Dallas, Texas.
Rice Motor Products Co., Inc., 1606 Grand Ave., Kansas City, Missouri.
Mr. W. S. Lovejoy, 3818 Mason St., Omaha, Nebraska.
Mr. F. G. Quinn, 1423 Locust St., St. Louis, Missouri.
Mr. A. E. Woollett, 112 So. 8th St., Minneapolis, Minnesota.
Holmes Motor Co., cor. Jefferson & Martin Sts., Milwaukee, Wisconsin.
Holloway Sales Co., 2101 So. Michigan Ave., Chicago, Illinois.
Geo. F. Balk Sales Co., 9 Selden near Woodward, W., Detroit, Michigan.
Mr. David T. Bussey, 188 Peachtree St., Atlanta, Georgia.
Acme Feed Co., Greenville, South Carolina.
Relco Lock Sales Co., 905½ North Broad St., Philadelphia, Pa.

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THE RELIANCE COMPANY
CHICAGO — 411-17 So. Sangamon Street — ILLINOIS

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LUBRICATORS, Speedometer Shaft

Happy Thought—See Norman, S. E.

Norman, S. E., Franklin, Mass. "Happy Thought."

LUBRICATORS, SPRING LEAF—See Cups, Spring Leaf; also Strips, Spring Leaf Lubricating

LUBRICATORS, Spring and Shackle Bolt

(See Cups, Oil and Grease; also Bolts, Spring and Shackle)

Meckel Lubricator Co., 1507 Grace Ave. (Lakewood), Cleveland, O.

LUBRICATORS, Tractor Force Feed

American Injector Co., 1459 14th Ave., Detroit, Mich. "Explo," "Surefeed."

Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for "McCord" Lubricators.) (See page 125.)

Explo—See American Injector Co.

McCord Mfg. Co., Detroit, Mich. (See pages 784 and 785.)

Madison-Kipp Co., 2227 Waubesa St., Madison, Wis.

Manzel Bros. Co., 309 Beard Ave., Buffalo, N. Y.

Surefeed—See American Injector Co.

LUBRICATORS or OIL PUMPS, Hand

(Auxiliary Hand Oil Pumps)

Cox Brass Mfg. Co., Albany, N. Y. (See page 261.)

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O.

LUBRICATORS or OIL PUMPS, Mechanical

(Engine driven Oil Pumps)

Commonwealth Brass Corp., Detroit, Mich. (See page 1139.)

Detroit Lubricator Co., 5842-5986 Trumbull Ave., Detroit, Mich.

Hancock Mfg. Co., 770 Henry St., Charlotte, Mich.

Higgins Machine Works, 25 Keystone St., Buffalo, N. Y. "Osgoods."

Lipman Pump Works, 100 Shirland Ave., Beloit, Wis.

Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O.

Milwaukee Circulating Pump Co., 387-389 Tenth St., Milwaukee, Wis. (See page 749.)

Mystic—See Cataract Refining & Mfg. Co.

Osgoods—See Higgins Machine Works.

Pedersen Lubricator Co., 636 First Ave., New York, N. Y.

Richardson-Phenix Co., 122-28 Reservoir Ave., Milwaukee, Wis.

Schirmer Co., 7319 W. Madison St., Cleveland, O. "Viking."

Viking—See Schirmer Co.

LUBRICATORS and OIL PUMPS, for Fords

(Supplementary oiling devices)

Auto Accessories Mfg. Co., 509 Mulberry St., Des Moines, Iowa. Strong.

Brown Co., 1071-73 Clinton St., Syracuse, N. Y.

Centri—See Forgear Pump Co.

Consolidated Mfg. Co., 1440 Broadway, Oakland, Cal. "Wilmo."

Forgear Pump Co., 523 Hobart St., Oakland, Cal. "Centri."

Fracto Specialty Co., 161 Massachusetts Ave., Boston, Mass.

Junior—See Pedersen Lubricator Co.

Kralicek & Co., Chas., Cleveland, O. "S. O. S."

Milwaukee Circulating Pump Co., 387-389 Tenth St., Milwaukee, Wis. (See page 749.)

Pedersen Lubricator Co., 636 First Ave., New York, N. Y. "Junior."

S. O. S.—See Kralicek & Co.

Speedway Engineering Co., 910 N. Illinois St., Indianapolis, Ind. (See page 1133.)

Standex, Inc., 341 E. Ohio St., Chicago, Ill.

Strong—See Auto Accessories Mfg. Co.

Wilmo—See Consolidated Mfg. Co.

LUGGAGE BAGS FOR FORDS—See Bags, Luggage

LUGGAGE CARRIERS—See Holders, Suit Case; also Racks, Trunk; also Trunks; also Carriers, Motorcycle Luggage

LUGGAGE CASES FOR FORDS—See Bags, Luggage

LUGGAGE HOLDERS—See Holders, Suitcase or Luggage

LUGS, Tire

National Auto Products Co., 1780-82 Broadway, New York, N. Y. "E-Z," "Change," "Neverlost."

E-Z Change—See National Auto Products Co.

Neverlost—See National Auto Products Co.

LUGS, Tractor Detachable

Bentz—See Schell, Walter S.

Loxon—See Universal Lug Co.

Schell, Walter S., 1307-09 Market St., Harrisburg, Pa. "Bentz."

Universal Lug Co., 1401 S. 55th Ct., Cicero, Ill. "Loxon."

Warren Steel Castings Co., 3400 Maury Ave., St. Louis, Mo.

LUGS, Transmission Band, for Fords

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

LUMBER, Airplane

Astoria Veneer Mills & Dock Co., 347 Madison Ave., New York, N. Y.

Central Timber Export Co., 15 William St., New York, N. Y.

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PADLOCKS PILLAR LOCKS CABINET LOCKS
SWITCH LOCKS SPECIAL LOCKS

When you use King Locks, you use a lock with unusual strength and security. Send us your specification.

THE KING LOCK CO.

CHICAGO 319 West Ohio Street ILLINOIS

Powers Norwegian Transmission Lining

This extra-quality lining is made of selected long fibre cotton, substantial yet pliable. A special process and compound makes it resist oil, grease, water, gasoline and heat. Can be worn down to the thickness of paper without raveling or losing its grip.

Chatter, jerky, jumpy and uncertain starting and stopping is completely eliminated and every stop is smooth and silent.

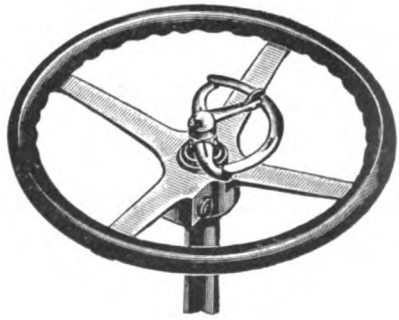
Packed in a neat carton—three pieces of proper length with rivets. Also supplied in 100 foot rolls.

WRITE FOR CATALOGUE

POWERS MFG. COMPANY
Waterloo Iowa

List Price
$1.50

The Powers Line Includes Tire Covers, Fan Belts, Radiator Covers, Etc.



"PERRY"

The Only Lock That Thieves Won't Touch

More sold since January than all other locks combined

Special (Yale) Type for Fords

Write for dealer proposition

PERRY AUTO LOCK CO.

2635 Michigan Avenue
CHICAGO, ILL.

A Mirror By Day—A Light By Night

PARK-LITE REAR VIEW MIRROR

Used On Front Left Fender

This lamp is so designed that it may be used as a rear view mirror for day driving. At night when a car is parked, by lowering mirror to horizontal position a 2CP6V lamp is automatically lit, it is used in place of the regular lighting equipment on the car—thus saving 11 times the electrical energy that otherwise would be drawn out of the storage battery. Shows white light front and red rear light.

Write us today and we will tell you the full story of the Park-Lite, prices to the trade, etc.

MIRROR PARK-LITE CORP.

208 WEST 17TH STREET NEW YORK CITY

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LUMBER, Airplane (Continued)

Dodge Mfg. Co., S. Union St., Mishawaka, Ind. "Indestructo."

Hoffman Bros. Co., 800 W. Main St., Fort Wayne, Ind.

Indestructo—See Dodge Mfg. Co.

Kneeland-Bigelow Co., 19th & Water Sts., Bay City, Mich.

Kosse Shoe & Schleyer Co., Carew Bldg., Cincinnati, O.

Multnomah Lumber & Box Co., Bancroft St., Portland, Ore.

North Vernon Lumber Mills, North Vernon, Ind.

Thompson & Co., Lewis, Astoria, N. Y.

LUMBER, Automobile

Abeles & Taussig Tie Corp., Commercial Bldg., St. Louis, Mo.

Agasote—See Pantasote Co.

American Column & Lumber Co., St. Albans, W. Va.

Anderson-Tully Co., N. Second St., Memphis, Tenn.

Baker Lumber Co., Turrell, Ark.

Bramble, A. D., Palmer, Mass.

Buffalo Hardwood Lumber Co., 940 Seneca St., Buffalo, N. Y.

Carrier Lumber Co., Brevard, N. C.

Carrier Lumber & Mfg. Co., Sardis, Miss.

Chickasaw Lumber Co., Demopolis, Ala.

Coppes Bros. & Zoak, Nappanee, Ind.

Darling Lumber Co., J. W., Cincinnati, O.

Evans Lumber Co., G. H., Chattanooga, Tenn.

Haskelite Mfg. Corp., 133 W. Washington St., Chicago, Ill.

Himmelberger-Harrison Lumber Co., Cape Girardeau, Mo.

Hoffman Bros. Co., 300 W. Main St., Fort Wayne, Ind.

Korn Co., Gwynne Bldg., Cincinnati, O.

Lake Independence Lumber Co., 623 S. Wabash Ave., Chicago, Ill.

Lamb-Fish Lumber Co., Charleston, Miss.

Leonard, H. R., Seaboard Bank Bldg., Norfolk, Va.

Love, Boyd & Co., ft. S. Second St., Nashville, Tenn.

Luehrmann Hardwood Lumber Co., Chas. F., 148 Carroll St., St. Louis, Mo.

Martin-Barriss Co., 2048 W. Third St., Cleveland, O.

Moore & McFerren, 365 N. Front St., Memphis, Tenn.

Multnomah Lumber & Box Co., Bancroft St., Portland, Ore.

Mundhenk-Curtiss Lumber & Fuel Co., 27 W. Van Buren St., Chicago, Ill.

North Vernon Lumber Mills, North Vernon, Ind.

Paepcke Leicht Lumber Co., 111 W. Washington St., Chicago, Ill.

Pantasote Co., 11 Broadway, New York, N. Y. "Vehisote," "Agasote."

Peitch Co., F. T., 803 Superior Ave., W., Cleveland, O.

Riel-Kadel Lumber Co. (S. Memphis), Memphis, Tenn.

Shafer, Cyrus C., Citizens National Bank Bldg., South Bend, Ind.

Sheip & Vandegrift, 812-32 N. Lawrence St., Philadelphia, Pa.

Shiels & Co., Charles F., McLean Ave. & Gest St., Cincinnati, O.

Sullivan & Co., T., 2 Arthur St., Buffalo, N. Y.

Three States Lumber Co., Memphis, Tenn.

Thompson-Katz Lumber Co., 8 S. Main St., Memphis, Tenn.

Vehisote—See Pantasote Co.

West Virginia Timber Co., Orange, Va.

Young Lumber Co., 19 Edwards St., Binghamton, N. Y.

LUMINOUS COMPOUNDS—See Paints, Luminous

LUNCH BOXES—See Hampers, Touring

LUNCH TABLES—See Tables, Picnic and Lunch

LUNCHEON CASES—See Hampers, Touring

MACHINE BOLTS—See Bolts, Machine

MACHINE KEYS—See Keys, Machine

MACHINE SCREW TAPS—See Taps and Dies

MACHINE SCREWS—See Screws, Machine

MACHINE WORK TO ORDER

(See also Screw Machine Products)

Acme Electric & Mfg. Co., 203 St. Claire St., N. E., Cleveland, O.

Acme Mfg. Works, 660 Turk St., San Francisco, Cal.

Adapt Machinery Co., 1624 S. Wabash Ave., Chicago, Ill.

Advance Machine Co., 2700 Franklin St., Detroit, Mich.

Aetna Brass & Bronze Co., 1631-35 E. 35th St., Cleveland, O.

Akins Machine Co., Wm. C., 1 Gleason Pl., Rochester, N. Y.

Albany Machine & Tool Co., 1031 Broadway, Albany, N. Y.

Alent Machine Tool Co., Rochester, N. Y.

Alexander & Cox Co., 2358 Ogden Ave., Chicago, Ill.

Allen-Fleming Machine Works, 174-76 Ellicott St., Buffalo, N. Y.

American Brass Products Co., Pottstown, Pa.

American Brass & Iron Co., Detroit, Mich. (See page 205.)

American Die & Tool Co., Reading, Pa. (See page 991.)

American Forge & Machine Co., 1650 Barth Ave., Canton, O. (See page 439.)

American Metal Products Co., 6431-61 Epworth Blvd., Detroit, Mich. (See page 625.)

American Metal Products Co., 671 Kinnickinnic Ave., Milwaukee, Wis.

American Tool & Garage Co., 2056 E. Fourth St., Cleveland, O.

American Tool & Machine Co., 10 High St., Boston, Mass.

American Tool, Die & Machine Co., 1114-20 E. Tenth St., Indianapolis, Ind.

Anderson, H. S., 211-19 N. Sheridan Ave., Pittsburgh, Pa.

Arizona Machinery Mfg. Co., 222-26 N. Seventh Ave., Phoenix, Ariz.

Arlington Machine Works, 668-74 Jenks St., St. Paul, Minn.

Armstrong Machine & Tool Co., 1001 S. Washington St., Peoria, Ill.

Arrow Tool Co., 220 Cannon St., Bridgeport, Conn.

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Quantity & Quality Production in Machine Work

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BEARING BRONZES
AUTOMATIC SCREW MACHINE PRODUCTS

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Special Circulating Pump for Fords

The fact that 90% of all high grade cars are equipped with circulating pumps is proof that this is an ideal system of cooling cars.

We have designed a special circulating pump for Ford Cars that greatly increases their cooling efficiency.

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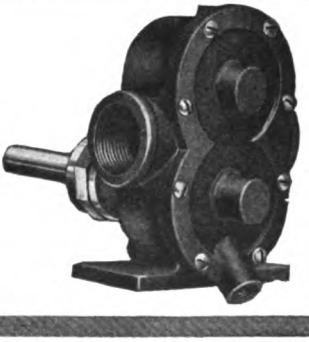
ATLAS
Standardized Bronze Geared Circulating Pump

These pumps are designed for Automobiles, Trucks, Tractors, Aircrafts and Motor Boats. If you manufacture any of these vehicles, we will gladly submit best prices in quantities.

We also manufacture Centrifugal Water Pumps for automobiles in large quantities. We are also in a position to design and build pumps to suit any requirements. Literature describing the above products will be mailed upon request.



FOLLOWING SIZES OF ATLAS CORED BARS CARRIED IN STOCK

Outside Diameter	CORE SIZES (Inside Diameter)												
1"	½"	⅝"	....	....	....	....	....	....	....	....	....	....	....
1⅛"	....	⅝"	¾"	....	....	....	....	....	....	....	....	....	....
1¼"	....	⅝"	¾"	⅞"	....	....	....	....	....	....	....	....	....
1⅜"	....	⅝"	¾"	⅞"	1"	....	....	....	....	....	....	....	....
1½"	....	⅝"	¾"	⅞"	1"	1⅛"	....	....	....	....	....	....	....
1⅝"	....	....	¾"	⅞"	1"	1⅛"	1¼"	....	....	....	....	....	....
1¾"	....	....	¾"	⅞"	1"	1⅛"	1¼"	....	....	....	....	....	....
1⅞"	....	....	....	⅞"	1"	1⅛"	1¼"	1⅜"	....	....	....	....	....
2"	....	....	....	....	1"	1⅛"	1¼"	1⅜"	1½"	....	....	....	....
2⅛"	....	....	¾"	⅞"	1"	1⅛"	1¼"	1⅜"	1½"	1⅝"	....	....	....
2¼"	....	....	¾"	⅞"	1"	1⅛"	1¼"	1⅜"	1½"	1⅝"	1⅝"	....	....
2⅜"	....	....	¾"	⅞"	1"	1⅛"	1¼"	1⅜"	1½"	1⅝"	1¾"	1⅞"	....
2½"	....	....	¾"	⅞"	1"	1⅛"	1¼"	1⅜"	1½"	1⅝"	1¾"	1⅞"	2"
2¾"	....	1"	1¼"	1½"	1¾"	2"	2¼"	....	....	....	....	....	....
3"	....	1"	1¼"	1½"	1¾"	2"	2¼"	2½"	....	....	....	....	....
3¼"	....	1"	1¼"	1½"	1¾"	2"	2¼"	2½"	2¾"	....	....	....	....
3½"	....	....	1¼"	1½"	1¾"	2"	2¼"	2½"	2¾"	3"	....	....	....
3¾"	....	....	....	1½"	1¾"	2"	2¼"	2½"	2¾"	3"	3¼"	....	....
4"	....	....	....	....	....	2"	2¼"	2½"	2¾"	3"	3¼"	3½"	....

All Bronze used is composed of 80% copper, 10% tin and 10% lead.

COLUMBUS, OHIO, U.S.A.

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MACHINE WORK TO ORDER (Continued)

Ashley Machine Works, 724 University Ave., Rochester, N. Y.

Atlas Brass Foundry Co., Columbus, O. (See page 595.)

Attwood Brass Works, Grand Rapids, Mich. (See page 1195.)

Auto Engine Works, University Ave. & Griggs St., St. Paul, Minn.

Auto Engineering Co., 429-31 Bagg St., Detroit, Mich. (See page 91.)

Auto Parts Mfg. Co., 1815 Trombly Ave., Detroit, Mich.

Baker Gun & Forging Co., Batavia, N. Y. (See page 639.)

Ball Gear & Machine Co., 56-58 Greenpoint Ave., Brooklyn, N. Y.

Barscott Co., 39 W. Adams St., Chicago, Ill.

Baum's Metal Specialties Co., 1022 Wyandotte St., Kansas City, Mo.

Baush Machine Tool Co., Springfield, Mass. (See page 513.)

Bayne Mfg. Co., Bushnell, Ill. (See page 725.)

Bay State Machine & Tool Co., 30 Cypress St., Springfield, Mass.

Bay View Foundry Co., McDonough, Water & Shelby Sts., Sandusky, O.

Beard Machine Co., L. O., 315 E. Marion St., Lancaster, Pa.

Beaver Machine & Tool Co., 625-43 N. Third St., Newark, N. J.

Bender & Sons, Ph. J., 87 Frankfort St., New York, N. Y.

Benton Harbor Engineering Works, Benton Harbor, Mich.

Berggren & Pearson Machine Co., 211-27 Canal St., New York, N. Y.

Bersted Forming Tool Co., 765-71 Mather St., Chicago, Ill.

Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn.

Bilton Machine Tool Co., Bridgeport, Conn. (See page 613.)

Birch & Birch, 1001-03 E. College St., Crawfordsville, Ind.

Blair Tool & Machine Works, 521 Greenwich St., New York, N. Y.

Blake & Johnson Co., Waterbury, Conn. (See page 847.)

Blanchard Machine Co., 64 State St., Cambridge, Mass.

Blettner Co., Geo. H., 1401-05 Jackson Blvd., Chicago, Ill.

Blickman, S., New York, N. Y. (See page 751.)

Boeger-Meyer Machine & Tool Co., 59 McWhorter St., Newark, N. J.

Bond Machine Co., 815-25 W. Fifth St., Wilmington, Del.

Bonney Vise & Tool Works, Allentown, Pa. (See page 437.)

Boston Tool & Mfg. Co., 262 Dover St., Boston, Mass.

Bourke Machine Co., 1450 21st St., Detroit, Mich.

Braden Mfg. Co., 135 W. Third St., New York, N. Y.

Brady Tool & Die Corp., 236 Mill St., Rochester, N. Y.

Bradley Motor Co., 163 Highland Ave., Newark, N. J.

Brass Foundry Co., 711-17 S. Adams St., Peoria, Ill.

Bremer Co., O. B., 222 Division St., Burlington, Ia. (See page 1163.)

Bremer & Co., 139 N. Seventh St., Philadelphia, Pa.

Brewster & Co., Queensboro Bridge Plaza, Long Island City, N. Y.

Bridgeport Die & Machine Co., 170 Elm St., Bridgeport, Conn.

Bridgeport Engineering Co., Bridgeport, Conn.

Bridgeport Silverware Mfg. Corp., 65 Holland St., Bridgeport, Conn.

Bristol Industries, Inc., Woolworth Bldg., New York, N. Y. (See page 351.)

Broadway Tool & Machine Co., 717 Livingston St., Elizabeth, N. J.

Brock, Jr., Tool & Mfg. Works, Arthur, 533 N. 11th St., Philadelphia, Pa.

Brooks Machine Co., York, Pa.

Bucher-Smith Co., East Liverpool, O

Buckeye Welding & Repair Shop, 133 Water St., Lima, O.

Buerk Tool Works, 38 Pearl St., Buffalo, N. Y.

Buffalo Cylinder Grinding Co., 337 Main St., Buffalo, N. Y.

Bultman Co., F. H., 10271 Berea Rd., Cleveland, O.

Bunting Brass & Bronze Co., 737 Spencer St., Toledo, O. (See page 295.)

Burgess Machine Co., 45 Chestnut St., New Haven, Conn.

Carpenter Mfg. Co., E. W., 515 Union Ave., Bridgeport, Conn.

Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O.

Central Machine Co., 715 Brush St., Detroit, Mich.

Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 345.)

Channon Mfg. Co., James H., 222-32 W. Erie St., Chicago, Ill. (See page 127.)

Chester Die Sinking & Machine Co., Chester, Pa.

Chicago Metal Products Co., 501 S. Jefferson St., Chicago, Ill.

City Auto Repair Co., 36 Chapel St., Hartford, Conn.

City Engineering Co., Beaver Power Bldg., Dayton, O.

Clark Engine & Boiler Co., Ranson & Clark Sts., Kalamazoo, Mich.

Cleveland Heater Co., 1900 W. 112th St., Cleveland, O.

Club Auto Parts & Machine Co., 204-06 Chester St., Buffalo, N. Y.

Cochran Piston Corp., Detroit, Mich. (See page 735.)

Cogswell Mfg. Co., 85 Hall St., Springfield, Mass.

Cohoes Iron Foundry & Machine Co., 37 Van Rensselaer St., Cohoes, N. Y.

Coin Device & Signal Co., 409 Eighth Ave., New York, N. Y.

Collamer Machine Works, 1214 E. 152d St., Cleveland, O.

Columbus Auto Parts Co., 215 E. Russel St., Columbus, O.

Commonwealth Brass Corp., Detroit, Mich. (See page 1139.)

Connery Machine & Tool Co., 56 Harrison Ave., Springfield, Mass.

Cotton, H. W., Woolworth Bldg., New York, N. Y.

Craddock, Edward S., 221 E. 144th St., New York, N. Y.

Crittenden Mfg. Co., 3380 Washington St., Boston, Mass.

Currie & Son, J. B., 72 Adams St., Brooklyn, N. Y.

Cygnet Mfg. Co., 41 Perry St., Buffalo, N. Y.

Davis Machine Co., C. F., 127-31 Andrews St., Rochester, N. Y.

Day, Geo., 21 Haverhill St., Boston, Mass.

De Camp & Sloan, 172 Pennington St., Newark, N. J.

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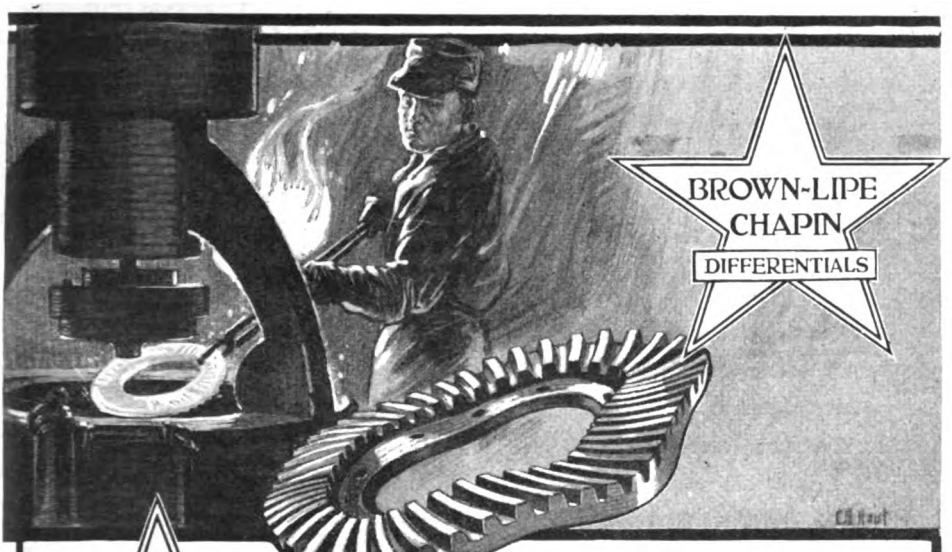

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Both at SYRACUSE, N. Y.

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MACHINE WORK TO ORDER (Continued)

Detroit Accessories Corp., Detroit, Mich. (See page 747.)

Detroit Gear & Machine Co., Detroit, Mich. (See page 471.)

Detroit Machine Tool Co., 6443 St. Antoine St., Detroit, Mich.

Detroit Motor Castings Co., 299-303 Beaufait Ave., Detroit, Mich.

Detroit Motor Parts Co., 133-35 W. Larned St., Detroit, Mich. (See page 551.)

Detroit Reliable Machine Co., 676 W. Grand Blvd., Detroit, Mich.

Diamond Stamping Works Co., 5400 Windsor Ave., Cleveland, O.

Diamant Tool & Mfg. Co., 91-97 Runyon St., Newark, N. J.

Dice Machine Co., 16th & Jackson Sts., Anderson, Ind.

Diebold Products Co., 5333-37 St. Clair Ave., Cleveland, O.

Dimler-Hines Tool Co., Third & Canal Sts., Dayton, O.

Diluguid Bros., 975 Atlantic Ave., Brooklyn, N. Y.

Divine, J. Morgan, Lock Sheldrake, N. Y.

Dodge Mfg. Co., S. Union St., Mishawaka, Ind.

Dodge Tool Co., 721 Main St., Grinnell, Ia.

Dorchester Machine & Tool Works, 70 Freeport St., Boston, Mass.

Dover, George W., Eddy St. & Thurbers Ave., Providence, R. I.

Driver-Harris Co., Harrison, N. J.

Du Bois Machine Shop, 113-28 Hudson Ave., Albany, N. Y.

Dunham Co., Thos., Aurora, Ill. (See page 167.)

Dunkirk Machine & Boiler Co., Dunkirk, N. Y.

Dunner Machine Co., 220 Center St., New York, N. Y.

Eagle Engineering Co., Springfield, O.

Eagle Machine Co., 20 N. Noble St., Indianapolis, Ind.

Eagle Tool Co., 1103 S. Liberty St., Muncie, Ind.

East Davenport Machine Co., 1103 Mound St., Davenport, Ia.

East Moline Engineering & Mfg. Co., East Moline, Ill.

Eastern Production Co., 136 Leib St., Detroit, Mich.

Easton Machine Co., Central St., So. Easton, Mass.

Eclipse Machine Co., Elmira, N. Y. (See page 525.)

Elite Machine & Tool Works, 220 W. 19th St., New York, N. Y.

Ellicott Machine Co., 160 Ellicott St., Buffalo, N. Y.

Elliott Mfg. Co., J. H., Madison & Main Sts., Bridgeport, Conn.

Eisener Mfg. Co., C. C., 15423 Center St., Harvey, Ill.

Emerson Mfg. Co., 3529 Gratiot Ave., Detroit, Mich.

Emerson Pump & Valve Co., Alexandria, Va.

Enterprise Brass & Plating Co., Sixth & Baymiller Sts., Cincinnati, O.

Eppenbach, Wm., 231 Vernon Ave., Long Island City, N. Y.

Eureka Tool & Machine Co., 306 Market St., Newark, N. J.

Exeter Brass Works, 10 R. R. Ave., Exeter, N. H.

F-S Machine Specialties, 171 Washington St., Newark, N. J.

Federal Machine Products Co., 6442 Farnsworth St., Detroit, Mich.

Federal Tool & Machine Co., 24 Scott St., Newark, N. J.

Feeney Tool Co., 751 Central Ave., Bridgeport, Conn.

Ferro Machine & Foundry Co., 47 Hubbard Ave., Cleveland, O.

Fiber Barrel Machinery & Mfg. Co., 2516 Jane St., Pittsburgh, Pa.

Fisher Machine & Tool Co., 102 Broadway, Buffalo, N. Y.

Flagg & Co., Stanley G., Morris Bldg., Philadelphia, Pa.

Foits Mfg. & Supply Co., Hagerstown, Md.

Ford Mfg. Co., M. J., 307-11 Newark St., Hoboken, N. J.

Fore River Shipbuilding Corp., Quincy, Mass.

Forest City Machine & Forge Co., 5431 Lakeside Ave., N. E., Cleveland, O.

Fort Dearborn Mfg. Co., First St., Rock Falls, Ill.

France Foundry & Machine Co., (N. Baltimore), Baltimore, O.

Franklin Machine & Tool Co., Springfield, Mass. (See page 1205.)

Frostholm Bros., 1309 Park St., Syracuse, N. Y.

Fuller & Sons Mfg. Co., Kalamazoo, Mich. (See page 563.)

G-H-P Mfg. Co., 129 N. Main St., Providence, R. I.

G-K Machine & Tool Co., 244-46 Greenwich St., New York, N. Y.

G. & G. Mfg. Co., 2126 Howard St., Detroit, Mich.

Garrison Machine Works, 26 S. St. Clair St., Dayton, O.

Garvin Machine Co., Spring & Varick Sts., New York, N. Y.

Geier Co., P. A., 105th St. & Elk Ave., Cleveland, O. (See page 695.)

General Machine Co., 227 Eddy St., Providence, R. I.

General Machine & Tool Co., Wildwood Ave., Jackson, Mich.

General Mfg. Co., 255 Meldrum Ave., Detroit, Mich.

General Tool & Engineering Co., 2496 E. Grand Blvd., Detroit, Mich.

Genesee Precision Tool & Die Co., 105 N. Water St., Rochester, N. Y.

Gill & Sons Forge & Machine Works, P. H., Lorraine & Otsego Sts., Brooklyn, N. Y.

Gilmour, J. Morrison, 149-51 Lafayette St., New York, N. Y.

Gleason-Peters Air Pump Co., 384 Classon Ave., Brooklyn, N. Y.

Globe Machine & Stamping Co., 1200-50 W. 76th St., Cleveland, O. (See page 1049.)

Gnome Machine & Tool Co., Elizabeth, N. J.

Grand Machine Co., 3456 S. Grand Ave., St. Louis, Mo.

Grand Tool & Machine Works, 161 Grand St., New York, N. Y.

Gravity Carburetor Co., 3062 E. 93rd St., Cleveland, O.

Green & Son, John, 221-24 N. Market St., Hoopeston, Ill.

Greist Mfg. Co., New Haven, Conn. (See page 1117.)

Gwynn Engineering Co., 100 Liberty Ave., Pittsburgh, Pa.

H. L. & W. Sales & Mfg. Co., 2755 W. Fort St., Detroit, Mich.

Hall Lamp Co., C. M., Detroit, Mich. (See page 493.)

Hall Switch & Signal Co., Garwood, N. J.

Hammerlund Mfg. Co., 144-46 W. 18th St., New York, N. Y.

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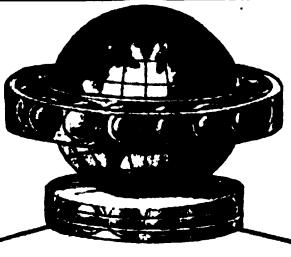

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MACHINE WORK TO ORDER (Continued)

Harbor Machine Co., 183 High St., Boston, Mass.

Harley Co., Page Blvd., Springfield, Mass. (See pages 205 and 425.)

Harry Bros. Mfg. Co., 1302 E. Woodbridge St., Detroit, Mich.

Hart Machine & Tool Co., 364 Atlantic Ave., Boston, Mass.

Hartford Machine Screw Co., Hartford, Conn. (See page 839.)

Harvey-Hanes Machine Co., 369 Ellicott St., Buffalo, N. Y.

Hauser Machine & Mfg. Co., 232 Mill St., Rochester, N. Y.

Hearn Machine Works, J. C., Columbus, O.

Hedges Co., B. E., Genesee & Division Sts., Auburn, N. Y.

Hergi Mfg. Co., Bridgeport, Conn.

Higginson-Gibson Mfg. Co., 76 Atherton St., (Jamaica Plain), Boston, Mass.

Hinckley Machine Works, E. Lincoln Ave., Hinckley, Ill.

Hoosier Drilling Machine Co., 612-14 E. Madison St., Goshen, Ind.

Horat & Co., Lafayette, Ind. (See page 857.)

Houpert Machine Co., Harris Ave. & Main St., Long Island City, N. Y. (See page 707.)

Hub Engineering & Machine Co., Bound Brook, N. J.

Hudson-Peck Machine Products Co., Real Estate Trust Bldg., Philadelphia, Pa.

Huhn Mfg. Co., Woolworth Bldg., New York, N. Y.

Hussey Power Parts Co., Giddings Rd., Cleveland, O.

Ideal Tool & Machine Co., 48 S. Water St., Poughkeepsie, N. Y.

Iles Mfg. Co., E. W., Shelton, Conn.

Illinois Mfg. & Supply Co., 1455 S. Michigan Ave., Chicago, Ill.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Indianapolis Tool & Mfg. Co., Indianapolis, Ind. (See page 669.)

Industrial Electric Mfg. Co., Wayne, Mich. (See page 733.)

Inman Co., H. A., Newark, N. Y.

International Tool & Gauge Co., 706 Howard Ave., Bridgeport, Conn.

Inter-State Machine Products Co., 56 Allen St., Rochester, N. Y.

J. C. H. Automatic Machine Works, 2434 N. Fairhill St., Philadelphia, Pa.

Jambor Mfg. Co., Milwaukee, Wis. (See page 965.)

Jefferson Iron Works, 548 W. Jefferson Ave., Detroit, Mich.

Jennings Machine Works, 33 W. Fayette St., Uniontown, Pa.

Jewelers Toolmaking Co., 220 Eddy St., Providence, R. I.

Johnson Bronze Co., New Castle, Pa. (See page 181.)

Johnson Mfg. Co., 103 N. Front St., Philadelphia, Pa.

Johnson Tool Co., 197-99 Eddy St., Providence, R. I. (See page 1179.)

Joliet Die & Tool Co., Joliet, Ill.

Jones, Mark W., 53d St. & Lansdowne Ave., Philadelphia, Pa.

Jost's Sons, Edmund, 58 First St., Newark, N. J.

Jurack Pattern Works, Chas., 600 S. Pierce St., Milwaukee, Wis.

Keck Mfg. Co., C., 77-79 Elm St., Cincinnati, O.

Keeler Brass Co., 251-71 Godfrey Ave., Grand Rapids, Mich.

Kell, Hock & Co., 354 Mulberry St., Newark, N. J.

Keller Machine & Tool Co., 342 Hudson Ave., West Hoboken, N. J.

Keller Pneumatic Tool Co., Grand Haven, Mich. (See page 441.)

Kelly Ball Bearing Co., 651 Turk St., San Francisco, Cal.

Kermath Mfg. Co., 5880 Commonwealth Ave., Detroit, Mich.

Keuka Industries, Inc., Hammondsport, N. Y.

Keyless Lock Co., Indianapolis, Ind.

Kidder Co., R. E., 35 Herman St., Worcester, Mass.

Kidder-Oswald Co., Dayton, O.

Knapp Engineering Corp., Arthur, 19 W. 44th St., New York, N. Y. (See page 881.)

Knott Mfg. Co., Tell City, Ind.

Kollmorgen Optical Corp., 35 Steuben St., Brooklyn, N. Y.

Konigslow Mfg. Co., Otto, 3501 Perkins Ave., Cleveland, O.

Krahn Mfg. Co., 588 Clinton St., Milwaukee, Wis.

Krebs Mfg. Co., 341 E. Ohio St., Chicago, Ill.

Kremer-Cummins Machine Co., 1833 E. 55th St., Cleveland, O.

Laclede Iron Works, 1315 Chestnut St., St. Louis, Mo.

Ladish Drop Forge Co., Cudahy, Wis. (See page 423.)

Lauer Machine Co., John, 620-26 St. Antoine

Lawrence & Co., L., 292 Halsey St., Newark, N. J.

Leard Co., Wm., New Brighton, Pa. (See page 851.)

Lehigh Engineering Co., Royersford, Pa.

Levy, Benj., 355 W. Broadway, New York, N. Y.

Lewis Spring & Axle Co., 42 Hollier St., Chelsea, Mich.

Liberty Electric Co., 97 Haverhill St., Boston, Mass.

Liberty Tool & Gauge Works, 338 Bernon St., Woonsocket, R. I.

Lincoln Machine Co., 1068 Main St., Pawtucket, R. I.

Linden & Co., Providence, R. I. (See page 839.)

Link-Belt Co., Indianapolis, Ind. (See page 235.)

Lodge & Co., 2310 S. Tioga St., Philadelphia, Pa.

Lombardi Motor Car Co., 67-71 Minerva St., Derby, Conn.

Lucas-Miner Tool & Production Co., 427 Valley St., Dayton, O.

McCadden Machine Works, 316 Sixth Ave., N., St. Cloud, Minn.

McCall Machine Works, 574 Lyell Ave., Rochester, N. Y.

McCulloch Mfg. Co., 216 High St., Boston, Mass. (See page 981.)

McDougall & Potter Co., 606-12 W. 55th St., New York, N. Y.

McKenna Brass & Mfg. Co., First Ave. & Ross St., Pittsburgh, Pa.

Mackenzie, A. S., 11th St. & Ridge Ave., Philadelphia, Pa.

Mantle & Co., 1907 Park Ave., New York, N. Y.

Manufacturers Machine Products Co., 1320-68 Mt. Elliot Ave., Detroit, Mich.

Manufacturers Tool & Die Co., 23 S. Water St., Rochester, N. Y.

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MACHINE WORK TO ORDER (Continued)

Marf Machine Co., 17-27 Vandewater St., New York, N. Y. (See page 413.)

Marion Screw & Machine Co., 17 N. Fifth St., Philadelphia, Pa.

Martini & Huneke Co. of America, 1201 Hudson St., Hoboken, N. J.

Massnick Mfg. Co., 6911 E. Lafayette Ave., Detroit, Mich.

Meadows Machine Works, Passaic Ave. & Lincoln Highway, Newark, N. J.

Medina Mfg. Co., Medina, O.

Meisel Press Mfg. Co., 945 Dorchester Ave., Boston, Mass. (See page 483.)

Metal Machinery Tool Co., 2176 E. 76th St., Cleveland, O.

Metal Products Mfg. Co., 241-43 W. 23rd St., New York, N. Y.

Metal Products Service Co., Blackstone Bldg., Cleveland, O.

Meyer Mfg. Co., A. J., 817-21 John St., West Hoboken, N. J.

Michigan Motor Parts Corp., 2124 Howard St., Detroit, Mich.

Michigan Pattern & Machine Works, 3429-39 E. Jefferson Ave., Detroit, Mich.

Middletown Fire Arms Specialty Co., 32 Warwick St., Middletown, Conn.

Miller, Julius W., 22 Raymond St., So. Norwalk, Conn.

Miller Tool & Mfg. Co., 1725 16th St., Detroit, Mich. (See page 1167.)

Milwaukee Forge & Machine Co., Milwaukee, Wis. (See pages 631 and 691.)

Milwaukee Metal Working Co., 382-88 Clinton St., Milwaukee, Wis.

Milwaukee Separator Mfg. Co., 247 Madison St., Milwaukee, Wis.

Moak Machine & Tool Co., 2547 Connors St., Port Huron, Mich.

Modern Auto Repair Co., 4605 Olive St., St. Louis, Mo.

Modern Pattern & Machine Co., 451-53 Monroe Ave., Detroit, Mich.

Modern Tool, Die Machine Co., 214-20 N. Fourth St., Columbus, O. (See page 1145.)

Moore Engineering Co., Hagerstown, Md.

Modern Tool & Machine Works, 344-50 Mulberry St., Newark, N. J.

Modern Tool & Mfg. Co., 119 Opera Pl., Cincinnati, O.

Moran Machine Co., John T., 103-07 Grape St., Syracuse, N. Y.

Morgan Mfg. Co., Court St., Keene, N. H. (See page 751.)

Motor Parts Machine Co., 645-49 S. Pierce St., Milwaukee, Wis.

Motor Products & Engineering Co., 1917 E. 61st St., Cleveland, O.

Murphy Die & Machine Co., A. F., 364-68 Atlantic Ave., Boston, Mass.

Myer-Moran Co., 212 N. Holliday St., Baltimore, Md.

National Acme Co., Cleveland, O. (See page 657.)

National Engineering Co., Broad & Chestnut Sts., Philadelphia, Pa.

National Sewing Machine Co., Belvidere, Ill.

National Stamping & Electric Works, 410-26 Clinton St., Chicago, Ill.

National Welding & Mfg. Co., 1418-30 Niagara St., Buffalo, N. Y.

Nazareth Foundry & Machine Co., Nazareth, Pa.

Nelson Tool Co., 782 E. 142d St., New York, N. Y.

Nestor Mfg. Co., 40 W. 13th St., New York, N. Y.

New Britain Machine Co., Chestnut St., New Britain, Conn.

New Process Specialty Co., 230-32 Hanover St., Milwaukee, Wis.

Newark Engineering & Tool Co., 476 18th Ave., Newark, N. J.

Newark Tool & Die Co., 20-22 Lawrence St., Newark, N. J.

Niagara Machine Works, 1387 Niagara St., Buffalo, N. Y.

Nilson Machine Co., A. H., 1525 Railroad Ave., Bridgeport, Conn.

Nilson-Miller Co., 1300-06 Hudson St., Hoboken, N. J.

North Dayton Machine & Tool Co., 126 Valley St., Dayton, O.

North End Tool Co., 339 Franklin Ave., Bloomfield, N. J.

Oberdorfer Brass Co., M. L., 804 E. Water St., Syracuse, N. Y.

Olson & Detile Co., 219 W. Seventh St., Sioux Falls, S. Dak.

Otto Metal Goods Corp., Wm. H., 401-07 St. Paul's Ave., Jersey City, N. J.

Paramount Tool Co., 102 St. Clair Ave., N. W., Cleveland, O.

Parker White Metal & Machine Co., 23rd & Railroad Sts., Erie, Pa.

Parker & Harper Mfg. Co., 18 Grafton St., Worcester, Mass.

Parts Mfg. Co., Canal & Jackson Sts., Cincinnati, O.

Pearce Co., Fred'k, 18-20 Rose St., New York, N. Y.

Perelstrous & Storms Tool Corp., 42 Broadway, New York, N. Y.

Perfection Auto Parts Co., 404 Lakeside Ave., N. W., Cleveland, O.

Perfection Machine Works, 16-18 Norris St., Buffalo, N. Y.

Pfau Mfg. Co., Cincinnati, O.

Phoenix Mfg. Co., Loraine & Grand River Aves., Detroit, Mich. (See page 1127.)

Piper Machine Co., 560-70 N. Elder Ave., Indianapolis, Ind.

Pittsburgh Reinforced Brazing & Machine Co., 2525 Liberty Ave., Pittsburgh, Pa.

Plum & Little, 30 N. Water St., Rochester, N. Y.

Portland Forge & Foundry Co., Portland, Ind.

Potter Tool & Machine Works, S. A., 69 E. 130th St., New York, N. Y.

Power, Laurence C., 712 Cherry St., Philadelphia, Pa.

Premier Machine Tool Works, 1031 Broadway, Albany, N. Y.

Precision Gauge & Tool Co., 166 Elm St., Bridgeport, Conn.

Premier Mfg. Co., Sandy Hook, Conn.

Printing Machinery Co., Cincinnati, O.

Producers' Machine & Specialty Corp., 61-65 Elizabeth St., Rochester, N. Y.

Production Engineering Co., 212 Centre St., New York, N. Y.

Progressive Tool Mfg. Co., Fifth St., Beloit, Wis.

Providence Engineering Corp., Providence, R. I.

Puritan Machine Co., 422 Lafayette Blvd., Detroit, Mich.

Queen City Tool Co., 778 Kensington Ave., Buffalo, N. Y.

Raymond Engineering Corp., 307 Lafayette St., New York, N. Y.

Recording Devices Co., 554 W. Fifth St., Dayton, O.

Reese Machine & Tool Works, 224-30 W. Main St., Plymouth, Pa.

Rex Machine & Tool Co., 24 Scott St., Newark, N. J.

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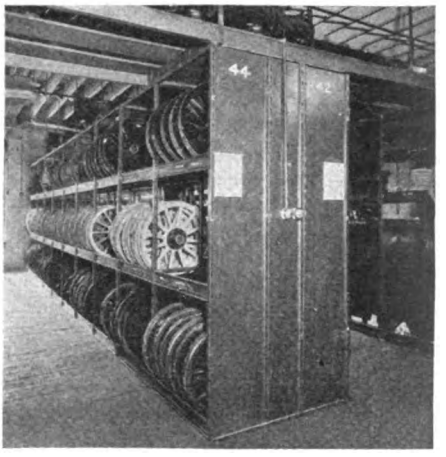
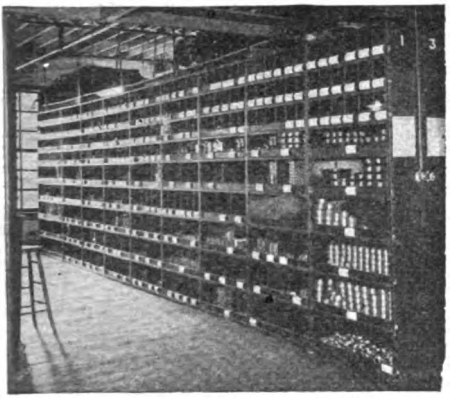
DURAND STEEL RACKS

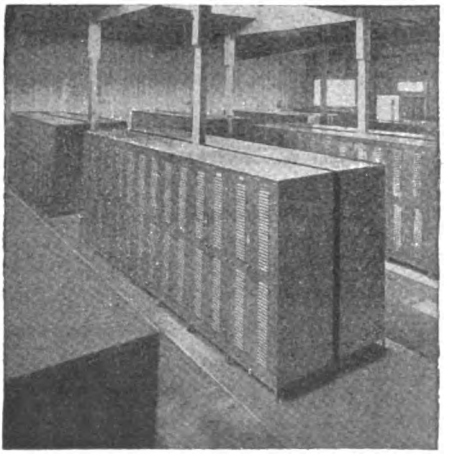
DURAND Steel Racks are instantly adaptable to any storage need. By the use of steel dividers, and steel bin fronts, or Durand Steel Boxes, the most minute parts may be kept safely. On the other hand, fenders, tires, wheels, gears, and the like, may be stored compactly and conveniently.





The flexibility of arrangement of Durand Steel Racks makes it possible to group component parts for greatest convenience. Durand Steel Racks save floor space, save unnecessary steps, speed up service, and reduce inventory labor. They are fireproof, easily taken down, moved and re-erected, and constitute a permanent asset on your books.

Durand Steel Lockers are the product of long specialization and experience, and are unsurpassed in simplicity and strength. Having few projecting parts, they are easily kept clean. Locks, doors, hinges, etc., are accurately made and smooth-working.



Write for catalogue of Steel Lockers or Steel Racks. Our Engineering Department will gladly help you with plans.

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1589 Fort Dearborn Bank Building, Chicago
599 Park Row Building, New York City

DURAND STEEL LOCKERS

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MACHINE WORK TO ORDER (Continued)

Reynolds Engineering Co., First St. & Third Ave., Moline, Ill.
Rider-Bagg Co., 369 Birnie Ave., Springfield, Mass.
Riverside Machine Co., Front & Penn Sts., Chester, Pa.
Rochester Auto & Tool Co., 17 Andrews St., Rochester, N. Y.
Rochester Motors Co., 634 Lexington Ave., Rochester, N. Y.
Rockford Drilling Machine Co., Ft. of Catherine St., Rockford, Ill.
Rome Engineering Co., 108 S. George St., Rome, N. Y.
Rosbach Co., F. P., Benton Harbor, Mich.
Roselle Machine & Tool Co., Roselle, N. J.
Roseville Engineering & Machine Co., 98 13th Ave., Newark, N. J.
Ross Machine Co., 1213-15 W. Seventh St., Lafayette, Ind.
Ross Machine Co. (Wollaston), Quincy, Mass. (See page 617.)
Ryman, L. M., 328 St. John St., New Haven, Conn.
S. A. Machine Co., 2114 E. Woodbridge St., Detroit, Mich.
"S-C" Regulator Co., Perry & High Sts., Fostoria, O.
S. & H. Machine & Tool Co., 23 Elizabeth St., Albany, N. Y.
Sanford Mfg. Co., F. C., 2060 Fairfield Ave., Bridgeport, Conn.
Savage Arms Corp., Sharon, Pa.
Sayre Stamping Co., Lockhart Bldg., Sayre, Pa.
Schaefer Mfg. Co., Pearl St., Berlin, Wis.
Schatz Mfg. Co., 17 Fairview Ave., Poughkeepsie, N. Y.
Schickel Motor Co., 55 Garden St., Stamford, Conn.
Schroeder Bros. Mfg. Co., 102 Brook St., Torrington, Conn.
Scientific Machine & Tool Corp., 57-59 Jay St., Brooklyn, N. Y.
Scovill Mfg. Co., Waterbury, Conn. (See page 845.)
Seavey Machine Works, Eugene, 359 Pearl St., New York, N. Y.
Security Tool Works, 115-17 S. Clinton St., Chicago, Ill.
Selik Bros., 2532 24th St., Detroit, Mich.
Seiss Mfg. Co., Phillips Ave. & N. Y. C. Ry., Toledo, O.
Service Gear & Machine Co., Second & Buttonwood Sts., Reading, Pa.
Shields Machine Co., Whitney Power Blk., Cleveland, O.
Shimer & Sons, Samuel J., Milton, Pa.
Shipman Machine Co., 218 Summer St., Boston, Mass.
Sier-Bath Co., 143 W. 54th St., New York, N. Y. (See page 1093.)
Simmons Mfg. Co., 3405-11 Perkins Ave., Cleveland, O.
Simplex Tool Co., Social St., Woonsocket, R. I.
Slocomb & Co., F. F., 14th & Poplar Sts., Wilmington, Del.
Smith Mfg. Co., Philip, Sidney, O.
Smith & Co., E. M., Peoria, Ill.
Spacke Machine & Tool Co., 600 Madison Ave., Indianapolis, Ind.
Specialty Gauge & Tool Co., 30-32 E. Georgia St., Indianapolis, Ind.
Specialty Products Co., 494 Mulberry St., Newark, N. J.
Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.
Stafford Machine Works, 2201-05 Campbell Ave., Kansas City, Mo.
Standard Gear Co., 5930 Commonwealth Ave., Detroit, Mich.
Standard Separator Co., 45th St., & Burnham Rd., Milwaukee, Wis.
Star Tool & Mfg. Co., 4520 Lexington St., Chicago, Ill.
Stearns Aero Parts Co., 203 St. Clair Ave., N. E., Cleveland, O.
Steber Machine Co., 713 First St., Utica, N. Y.
Steele & Conditt, 74 Pearl St., Jersey City, N. J.
Steering Gear & Parts Co., 700 Harper Ave., Detroit, Mich.
Steger & Sons, Piano Mfg. Co. (Industrial Division).
Sterling Engine Co., 333 S. Clinton St., Chicago, Ill.
Sterling Tool & Machine Co., 205-09 W. 19th St., New York, N. Y.
Stiles Mfg. Co., St. Louis, Mo. (See page 521.)
Sundstrom Mfg. Co., Shields Ave. at 32d St., Chicago, Ill. (See page 751.)
Superb Mfg. Co., Monticello, Ind.
Superior Machine & Engineering Co., 451 E. Fort St., Detroit, Mich.
Superior Tool & Die Works, 313 S. Clinton St., Chicago, Ill.
Superior Tool & Mfg. Co., 8 Reeves St., Worcester, Mass.
Swope-McCracken Co., 73 Monroe Ave., Detroit, Mich.
T. C. M. Mfg. Co., Hunterdon & First Sts., Harrison, N. J.
Taft-Peirce Mfg. Co., Woonsocket, R. I. (See page 849.)
Taylor Machine Co., 7804 Carnegie Ave., Cleveland, O.
Taylor-Shantz Co., 478 St. Paul St., Rochester, N. Y.
Textile Machine Works, Reading, Pa.
Thorn Machine Tool Works, 107 N. Franklin St., Syracuse, N. Y.
Tisch Machine Tool & Die Works, 452-54 Spring St., Elizabeth, N. J.
Torrington Mfg. Co., 70 Franklin St., Torrington, Conn.
Tranter Mfg. Co., 105 Water St., Pittsburgh, Pa. (See page 341.)
Traylor Engineering & Mfg. Co., Cornwells, Pa.
Triangle Tool of Erie Co., 162 E. Eighth St., Erie, Pa.
Twin City Die & Tool Works, 4522 Sixth Ave., Rock Island, Ill.
U. S. Axle Co., Pottstown, Pa.
Ultimate Machine Works, 209 Centre St., New York, N. Y.
Unger Bros., Newark, N. J.
Union Gear & Machine Co., 27 Purchase St., Boston, Mass.
United Machine Works, 55-57 W. Third St., New York, N. Y.
Universal Machine Co., 501-09 E. Preston St., Baltimore, Md.
Varick Machine & Tool Works, 143 Varick St., New York, N. Y.
Vahan Products Co., E. 73d St. & St. Clair Ave., N. W., Cleveland, O.
Viking Tool & Machine Co., 243-49 44th St., Brooklyn, N. Y.
Vulcan Brazing & Machine Co., 1630-32 Vine St., Philadelphia, Pa.
Walker Co., H. J., 131st St. & Taft Ave., Cleveland, O.
Walsh & Allen, 15 Wilbur Ave., Long Island City, N. Y.
Ware Bros., Automatic Products, 224 N. Ada St., Chicago, Ill.
Waterbury Brass Goods Corp., 160 Washington Ave., Waterbury, Conn.

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Mohair
Tie Straps
Roofing Duck
Moss
Casket Lowering Straps
Anti-Squeak
Whipcord
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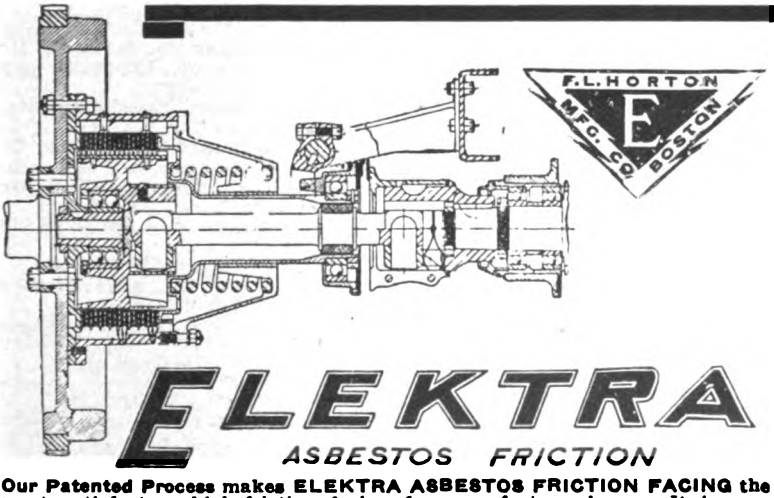
DEPARTMENT A2 TOLEDO, OHIO



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1,000,000 feet in actual use.

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MACHINE Work to Order (Continued)

Waterbury Castings Co., Railroad Hill St., Waterbury, Conn.
Watkins Nut Co., 2013 Franklin St., Detroit, Mich.
Wayne Works, 16th & North F Sts., Richmond, Ind.
Weber & Scher Mfg. Co., 24 Scott St., Newark, N. J.
Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)
Western Metal Specialty Co., 1919 St. Paul Ave., Milwaukee, Wis.
Western Pump Co., Front & Gaines Sts., Davenport, Ia.
Western Reserve Mfg. Works, 3710 E. 93rd St., Cleveland, O.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Whatley Co., A. H., 209 Cranston St., Providence, R. I.
Wheeler & Son, Frank, 55 Stone St., Meriden, Conn.
White Mfg. Co., Goshen, Ind.
Whiting & Comstock, Hartford, Conn. (See page 1157.)
Wicaco Screw & Machine Works, Seventh & Wood Sts., Philadelphia, Pa.
Wilco Co., 172 Griswold St., Detroit, Mich. (Distributors.) (See page 221.)
Willcox Motor & Mfg. Co., Saginaw, Mich. (See pages 823 and 1027.)
Williams, Franklin, 263 Jefferson St., Newark, N. J. (See page 163.)
Wilsch Machine & Specialty Co., 237 Lafayette St., New York, N. Y.
Wilton Machine Tool Co., 84 Linden Pk. St., Boston, Mass.
Wood & Spencer Co., 1930 E. 61st St., Cleveland, O.
Woods Engineering Co., 108 E. Patterson St., Alliance, O.
Worcester Job Shop, 21 Cypress St., Worcester, Mass.
Wright Machine Co., 321 E. Second St., Owensboro, Ky.
York Electric & Machine Co., 30-34 N. Penn St., York, Pa.
Young & Franklin, Industrial Bldg., Syracuse, N. Y.
Zacharias, Edwin H., 121 Washington St., Reading, Pa.
Zagora Mfg. Co., J., 1309 S. Mint St., Charlotte, N. C.
Zarem & Rose, 174 Centre St., New York, N. Y.
Zeifang Machine Co., 825 Linwood Ave., Niagara Falls, N. Y.
Zuhr, Henry, 200 William St., New York, N. Y.
Zumeta Machine Co., 310 W. 39th St., New York, N. Y.

MACHINERY, Dealers in

(Comprising only Dealers in Machinery who advertise in this Publication)

Fairbanks Co., New York, N. Y. (See pages 137 to 140.)

MACHINERY DESIGNERS—See Designers, Special Machinery and Tool

MACHINERY SPRINGS—See Springs, Machinery

MACHINES, AIRPLANE STRUT FORMING—See Lathes, Airplane Strut

MACHINES, Aircraft Propeller Blade Shaping

Fay & Egan Co., J. A., 415 W. Front St., Cincinnati, O. "Lightning."
Keller Mechanical Engraving Co., 72 Washington St., Brooklyn, N. Y. (See page 611.)
Lightning—See Fay & Egan Co.
Mattison Machine Works, Rockford, Ill.

MACHINES, Aircraft Propeller Hub Boring

Fay & Egan Co., J. A., 415 W. Front St., Cincinnati, O.

MACHINES, Aircraft Propeller Toothing

Whitney & Son, Baxter D., Winchenden, Mass. (See pages 477 and 853.)

MACHINES, Aircraft Wire Wrapping

Edstrom Machinery Co., Cary, Ill. (See page 1175.)

MACHINES, Autogenous Welding

(Oxy-Acetylene Welding Apparatus)

Admiral Welding Machine Co., 1605 Locust St., Kansas City, Mo.
American Welding Co., St. Louis, Mo.
Ashton, Laird & Co., 603-07 W. 43d St., New York, N. Y. "Astra."
Astra—See Ashton, Laird & Co.
Bastian-Blessing Co., W. Austin Ave. & La Salle St., Chicago, Ill. "Rego."
Bermo—See Bertschy Mfg. & Engineering Co.
Bertschy Mfg. & Engineering Co., 802 N. 16th St., Omaha, Neb. "Bermo."
Bishop & Babcock Co., 1200 E. 55th St., Cleveland, O.
Buckeye—See Macleod Co.
Cox Brass Mfg. Co., Albany, N. Y. (See page 261.)
Davis-Bournonville Co., Van Wagenen Ave., Jersey City, N. J.
Dyer Co., G. H., 155 Brookline St., Cambridge, Mass.
Economy Welding Machine Co., 2007 Central St., Kansas City, Mo.
Erie Welding Equipment Co., Mill Rd., Hamilton, O.
Eveready—See Oxweld Acetylene Co.
Fidelity Brass Mfg. Co., 1001 W. Washington St., Chicago, Ill.
General Welding Co., 355-57 14th St., Hoboken, N. J. "Ideal."
Hauck Mfg. Co., 126-34 Tenth St., Brooklyn, N. Y.
Havens Bros. Mfg. & Supply Co., 1622 Wazee St., Denver, Colo.
Henderson-Willis Welding & Cutting Co., 2305 N. 11th St., St. Louis, Mo.
Ideal—See General Welding Co.
Imperial Brass Mfg. Co., 1324 W. Harrison St., Chicago, Ill. (See page 177.)

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CONSTANT MESH

POWER-RITE transmissions are constant mesh type with an over-running ratchet gear for speed equalizing as between car or truck and the members of the transmission itself.

Speed selection is made by sliding keys which pick up internal teeth in the gears.

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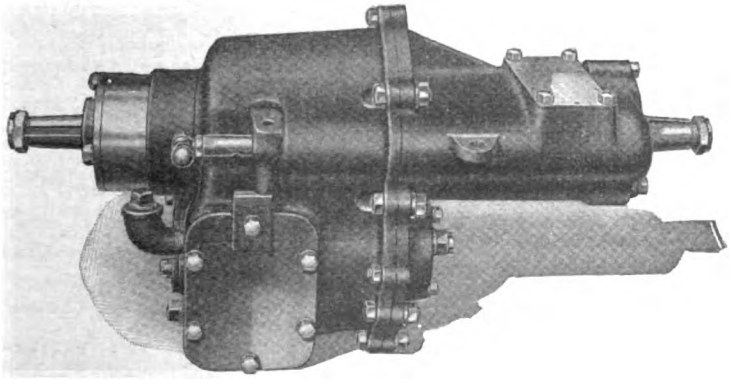
POWER - RITE transmissions are furnished optionally with either the stick control or our specially designed steering post lever speed selector.

25% to 30% lighter in weight.



Detroit Transmission Company
166 Lycaste Avenue Detroit, Michigan

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MACHINES, Autogenous Welding (Continued)

Liquid Carbonic Co., 3100 S. Kedzie Ave., Chicago, Ill.

MacLeod Co., 2232 Bogen St., Cincinnati, O. "Buckeye."

Meco—See Modern Engineering Co.

Metal Welding & Supply Co., 1440 Blake St., Denver, Colo.

Metals Welding Co., 4400 Perkins Ave., Cleveland, O.

Milburn Co., Alexander, 1420-28 W. Baltimore St., Baltimore, Md.

Modern Engineering Co., 23rd & Walnut Sts., St. Louis, Mo. "Meco." (See page 1151.)

Nev-O-Fail—See Turner Brass Works.

Never-Flash—See Torchweld Equipment Co.

Oxweld Acetylene Co., 3642 Jasper Pl., Chicago, Ill. "Eveready."

Oxy-Carbi Co., 396 George St., New Haven, Conn.

Rego—See Bastian-Blessing Co.

Rego—See Universal Oxygen Co.

Russ Co., A. E., Cleveland, O.

Saylor Co., F. A., 3271-73 Woodland Ave., Philadelphia, Pa.

Schaap Automobile Co., 344 Cumberland St., Brooklyn, N. Y. (See page 833.)

Schemmel Welding Machine Works, Wapakoneta, O.

Standard Gas Products Co., 216 Ivy St., Atlanta, Ga.

Suffolk Casting & Supply Co., 156 Pearl St., Boston, Mass.

Superior Oxy-Acetylene Machine Co., 1102 E. High St., Hamilton, O.

Tolman Mfg. Co., 1921 W. Third St., Boston, Mass.

Torchweld Equipment Co., 224 N. Carpenter St., Chicago, Ill. "Never-Flash."

Turner Brass Works, Sycamore, Ill. "Nev-O-Fail." (See page 177.)

United States Welding Co., 120 N. First St., Minneapolis, Minn.

Universal Oxygen Co., 14th & Illinois Sts., Sheboygan, Wis. "Rego."

Vulcan Brazing & Machine Co., 1630-32 Vine St., Philadelphia, Pa.

Waterhouse Welding Co., 3 Pelham St., Boston, Mass.

Weldrite Co., Queensboro Bridge Plaza, Long Island City, N. Y.

MACHINES, AUTOMATIC SCREW—See Machines, Screw

MACHINES, Balancing

(For Balancing Ways—See Ways, Balancing)

Akimoff—See Vibration Specialty Co.

Carwen—See Lippencott-Carwen Corp.

Lippencott-Carwen Corp., Erie Ave. & Richmond St., Philadelphia, Pa. "Carwen."

Vibration Specialty Co., Harrison Bldg., Philadelphia, Pa. "Akimoff." (See page 609.)

MACHINES, BAND SAWING—See Saws, Band

MACHINES, BANDAGE WRAPPING—See Machines, Tire Bandage Wrapping

MACHINES, BEADING—See Machines, Crimping

MACHINES, BEARING REAMING—See Reamers, Main Bearing and Connecting Rod for Fords.

MACHINES, Blue Printing

Wagenhorst Co., J. H., Dollar Bank Bldg., Youngstown, O.

Wickes Bros., 2501 Water St., Saginaw, Mich.

MACHINES, Body Rubbing

Brown—See Franklin Products.

Franklin Products, 1052 S. Clinton St., Syracuse, N. Y. "Brown."

MACHINES, Boring

(Horizontal)

Beaman & Smith Co., 20 Gordon Ave., Providence, R. I.

Cleveland Machine Tool Works, 3215 Superior Ave., Cleveland, O.

Conradson Machine Tool Co., Ninth & State Sts., Green Bay, Wis.

Giddings & Lewis Machine Tool Co., 142 Doty St., Fond du Lac, Wis.

Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.

Kriesel—See Mill City Co.

Lucas Machine Tool Co., 523 E. 99th St., Cleveland, O. "Precision."

Mill City Co., Minneapolis, Minn. "Kriesel."

National Lathe Co., 11-15 W. Second St., Cincinnati, O.

Niles-Bement-Pond Co., 111 Broadway, New York, N. Y.

Precision—See Lucas Machine Tool Co.

Universal Boring Machine Co., 30 Tower St., Hudson, Mass.

MACHINES, Boring

(Vertical)

Baker Bros., Westlake Ave. & Post St., Toledo, O.

Beaman & Smith Co., 20 Gordon Ave., Providence, R. I.

Bullard Machine Tool Co., Broad St. & Railroad Ave., Bridgeport, Conn.

Cincinnati Planer Co., 3120 South St. (Oakley), Cincinnati, O.

Colburn Machine Tool Co., 1033 Ivanhoe Rd., Cleveland, O.

Conradson Machine Tool Co.—See Ryerson & Son.

Foote-Burt Co., 4101 St. Clair Ave., Cleveland, O.

Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.

Hoefer Mfg. Co., Chicago & Jackson Sts., Freeport, Ill.

Hole-Hog—See Moline Tool Co.

King Machine Tool Co., Winton Place Sta., Cincinnati, O.

La Pointe Machine Tool Co., Hudson, Mass.

Moline Tool Co., 319 20th St., Moline, Ill. See "Hole-Hog."

National Lathe Co., 11-15 W. Second St., Cincinnati, O.

Niles-Bement-Pond Co., 111 Broadway, New York, N. Y

Ryerson & Son, Joseph T., Chicago, Ill. (Sole Distributors for Conradson Machine Tool Co., Green Bay, Wis.)

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Standard Dynamic and Static Balancing Machines

are available for the most commonly encountered examples of vibration. Special machines will be designed and built to meet any unusual conditions.

You need not be handicapped by vibratory difficulties, known or unsuspected. Let us solve them.

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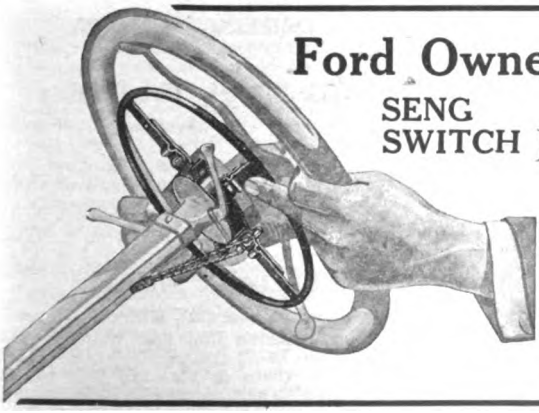

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MACHINES, BOW DRESSING — See Machines, Top Bow Dressing

MACHINES, Broaching

American Broach & Machine Co., 415 W. Huron St., Ann Arbor, Mich.
Connecticut Broach & Machine Co., 376 Bank St., New London, Conn.
La Pointe Co., J. N., New London, Conn.
Lapointe Machine Tool Co., 34 Tower St., Hudson, Mass.
Pawtucket Mfg. Co., 327 Pine St., Pawtucket, R. I.

MACHINES, Burning-In for Fords

Allred—See Sutton Auto Co.
American—See Fairbanks Co.
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Continental Auto Parts Co., 1807 E. 17th St., Columbus, Ind. (See page 419.)
Danielson Tool Co., Fulton St., Wausau, Wis.
Detroit Garage Equipment Co., 406 E. Jefferson Ave., Detroit, Mich.
Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill. "American.") (See pages 137 to 140.)
Jansen Machine Co., Theo. W., 741 21st St., Des Moines, Ia.
Littell Machinery Co., 532-34 Washington St., Spokane, Wash.
Miles Mfg. Co.—See Zinke Co.
Nazett Mfg. Co., 1440 Washington St., Eldora, Iowa.
Railway Specialty Co., Atchison, Kans. "Rysco."
Rysco—See Railway Specialty Co.
Service Products Co., Greenawalt Bldg., Springfield, O.
Service Station Equipment Co.—See Fairbanks Co.
Sutton Auto Co., C. R., 211-13 Buchanan St., Greensboro, N. C. "Allred."
Wilson, K. R., 10-16 Lock St., Buffalo, N. Y. (See page 611.)
Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Miles Mfg. Co., Newton, Ia.)

MACHINES, BUTTON — See Machines, Upholstery Button

MACHINES, CALCULATING — See Machines, Adding and Calculating

MACHINES, Cam Cutting

Standard Machinery Co., Auburn, R. I. (See page 377.)

MACHINES, CARBON BURNING—See Machines, Engine Decarbonizing

MACHINES, CHAIN REPAIR—See Tools, Tire Chain Repairs

MACHINES CHAMFERING — See Machines, Gear Tooth Chamfering

MACHINES, Crimping and Beading

Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."
Pettingell Machine Co., 77 Elm St., Amesbury, Mass.
Pexto—See Peck, Stow & Wilcox Co.
Quickwork—See Smith, H. Collier.
Smith, H. Collier, 807-15 Scotten Ave., Detroit, Mich. "Quickwork."

MACHINES, CYLINDER GRINDING — See Grinders, Cylinder

MACHINES, CYLINDER REGRINDING—See Grinders, Cylinder

MACHINES, DECARBONIZING—See Machines, Engine Decarbonizing

MACHINES, Cylinder Reboring

(See also Machines, Boring; also Bars, Boring; also Tools, Portable Cylinder Reboring)

Detroit Garage Equipment Co., 406 E. Jefferson Ave., Detroit, Mich.
Fairbanks Co., New York, N. Y. (Sole Distributors for Foote-Burt Co., Cleveland, O.) (See pages 137 to 140.)
Foote-Burt Co.—See Fairbanks Co.
Marvel Machinery Co., 13th Ave. S. & Third St., Minneapolis, Minn. (See page 611.)
Mill City Co., Minneapolis, Minn.
Storm Mfg. Co., Dept. L, Minneapolis, Minn. (See page 983.)

MACHINES, Die Cutting

Anderson Die Machine Co., 544 Iranston Ave., Bridgeport, Conn.
Hergi Mfg. Co., Bridgeport, Conn.
Keller Mechanical Engraving Co., 72 Washington St., Brooklyn, N. Y. (See page 611.)

MACHINES, Double Tread Tire Stitching

Bosworth Machinery Co., Campbell, 205 Lincoln St., Boston, Mass.
Landis Machine Co., 1515-27 N. 25th St., St. Louis, Mo.

MACHINES, DRESSING—See Machines, Top Bow Dressing

MACHINES, DRILLING—See Drills

MACHINES, Electric Tire Buffing

Clark, Jr., Electric Co., James, 520 W. Main St., Louisville, Ky.
Johnson—See U. S. Electrical Mfg. Co.
U. S. Electrical Mfg. Co., Third and Central, Los Angeles, Cal. "Johnson." (See page 479.)

MACHINES, Electric Welding

Agnew Electric Welder Co., Milford, Mich.
Arc Welding Machine Co., 525 W. 45th St., New York, N. Y.
Electric Arc Cutting & Welding Co., 152-58 Jelliff Ave., Newark, N. J.

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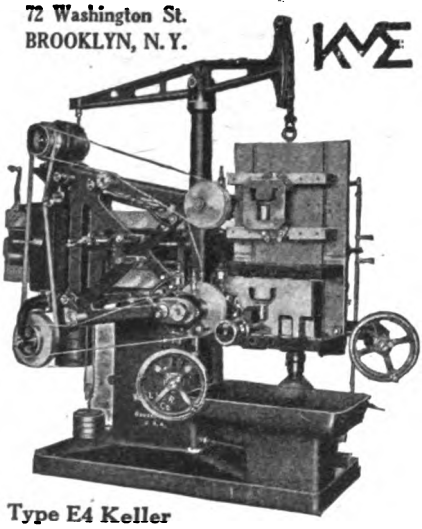

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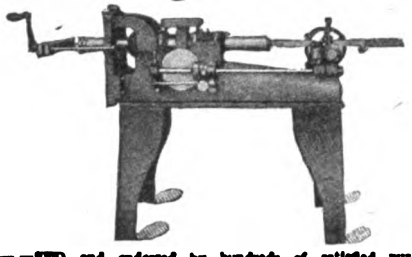

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MACHINES, Electric Welding (Continued)

Federal Machine & Welder Co., Dana Ave., Warren, O.

General Electric Co., Schenectady, N. Y. (See page 793.)

Geuder, Paeschke & Frey Co., 1265-1700 St. Paul Ave., Milwaukee, Wis. (See page 949.)

Gibb Instrument Co., 348 Palmer Ave., E., Detroit, Mich. "Zeus."

Lincoln Electric Co., 38th St. & Kelley Ave., N. E., Cleveland, O.

Taylor Welder Co., Warren, O. (See page 1023.)

Thomson Electric Welding Co., 166 Pleasant St., Lynn, Mass.

Winfield Electric Welding Machine Co., Warren, O. (See page 1023.)

Wilson Welder & Metals Co., 2 Rector St., New York, N. Y.

Zeus—See Gibb Instrument Co.

MACHINES, Engine Decarbonizing

(Oxygen carbon burning outfits; for Chemical Carbon Removers—See Compounds, Carbon; for Chain or Ball Removers—See Removers, Carbon; for Steam Carbon Removers—See Moisteners, Air or Mixture)

Ashton, Laird & Co., 603-07 W. 43rd St. New York, N. Y. "Astra."

Astra—See Ashton, Laird & Co.

Auto Gas Light Co., Hazleton, Pa. "M-E."

Bateman Bros., 419 E. Bank St., Centerville, Ia. "O-So-Easy."

Bishop & Babcock Co., 1260 E. 55th St., Cleveland, O. "Eureka."

Brooks Machine Co., 225 W. Lewis St., Wichita, Kans.

Champion—See Cleveland Faucet Co.

Cleveland Faucet Co., 708 Frankfort Ave., N. W., Cleveland O. "Champion."

Cox Brass Mfg. Co., Albany, N. Y. (See page 261.)

Davis-Bournonville Co., Van Wagenen Ave., Jersey City, N. J.

Dyer Co., G. H., 155 Brookline St., Cambridge, Mass.

Eureka—See Bishop & Babcock Co.

Fidelity Brass Mfg. Co., 1001 W. Washington St., Chicago, Ill.

Ferrier Mfg. Co., G. F., 221 S. Euclid Ave., Pittsburgh, Pa.

General Welding Co., 355-57 14th St., Hoboken, N. J. "Novel."

Henderson-Willis-Welding & Cutting Co., 2305 N. 11th St., St. Louis, Mo.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Liquid Carbonic Co., 3100 S. Kedzie Ave., Chicago, Ill.

M-E—See Auto Gas Light Co.

Novel—See General Welding Co.

O-So-Easy—See Bateman Bros.

Oxweld Acetylene Co., 3642 Jasper Pl., Chicago, Ill.

Prest-O-Carbon—See Prest-O-Lite Co.

Prest-O-Lite Co., 1400 Speedway, Indianapolis, Ind. "Prest-O-Carbon."

Stay-lit—See Torchweld Equipment Co.

Superior Oxy-Acetylene Machine Co., 1102 E. High St., Hamilton, O.

Tolman Mfg. Co., 19-21 W. Third St., Boston, Mass.

Torchweld Equipment Co., 224 N. Carpenter St., Chicago, Ill. "Stay-lit."

United States Welding Co., 120 N. First St., Minneapolis, Minn.

Vulcan Brazing & Machine Co., 1630-32 Vine St., Philadelphia, Pa.

Vulite Chemical Co., 8 Sears St., Boston, Mass.

Waterhouse Welding Co., 3 Pelham St., Boston, Mass.

MACHINES, Fender Rolling

Cleeso—See Cleesattel & Sons.

Cleesattel & Sons, Wm., 157-61 Walden Ave., Buffalo, N. Y. "Cleeso."

Yoder Co., Walworth Ave. & 58th St., Cleveland, O.

MACHINES, FENDER STRAIGHTENING—See Tools, Fender Straightening

MACHINES, Fender Wiring

Magee Sheet Metal Machinery Co., 728 Vermont Ave., Detroit, Mich.

Yoder Co., Walworth Ave. & 58th St., Cleveland, O.

MACHINES, FIGURING—See Machines, Adding and Calculating

MACHINES, Gear Cutting

Bilgram Machine Works, 1235 Spring Garden St., Philadelphia, Pa.

Bilton Machine Tool Co., Bridgeport, Conn. (See page 613.)

Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.

Cincinnati Gear Cutting Machine Co., Elam St. & Garrard Ave., Cincinnati, O.

Fellows Gear Shaper Co., 24 Pearl St., Springfield, Vt.

Flather Mfg. Co., E. J., 46 Spring St., Nashua, N. H.

Garvin Machine Co., Spring & Varick Sts., New York, N. Y.

Gleason Works, 1000 University Ave., Rochester, N. Y.

Gould & Eberhardt, Coit & Chancellor Ave., Irvington, N. J.

Lees-Bradner Co., 6210 Carnegie Ave., Cleveland, O.

Machine Products Co., E. 179th & St. Clair Aves., Cleveland, O.

New Britain Machine Co., Chestnut St., New Britain, Conn.

Newark Gear Cutting Machine Co., 67-69 Prospect St., Newark, N. J. (See page 613.)

Schuchardt & Schutte, 90 West St., New York, N. Y. (Importers.)

Sloan & Chace Mfg. Co., 351 Sixth Ave., Newark, N. J.

Whiton Machine Co., D. E., 190 Howard St., New London, Conn.

MACHINES, Gear Hobbing

Adams Co., 295 Sixth St., Dubuque, Ia.

Barber-Colman Co., Rockford, Ill.

Bilton Machine Tool Co., Bridgeport, Conn. (See page 613.)

Cincinnati Gear Cutting Machine Co., Elam St. & Garrard Ave., Cincinnati, O.

Gould & Eberhardt, Coit & Chancellor Ave., Irvington, N. J.

Jones Superior Machine Co., 1258-72 W. North Ave., Chicago, Ill.

Lees-Bradner Co., 6210 Carnegie Ave., Cleveland, O.

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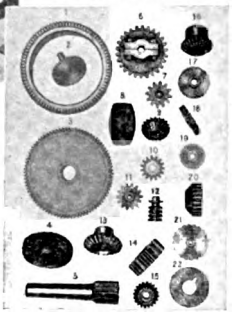

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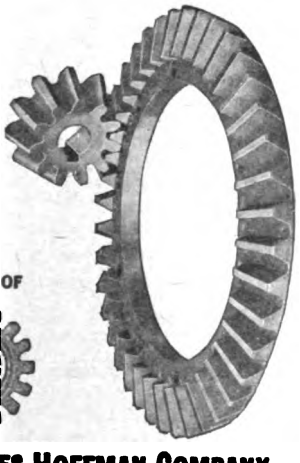

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MACHINES, Gear Hobbing (Cont'd)

Meisselbach-Catucci Mfg. Co., 51 Stanton St., Newark, N. J.

Newark Gear Cutting Machine Co., 67-69 Prospect St., Newark, N. J. (See page 613.)

Schuchardt & Schutte, 90 West St., New York, N. Y. (Importers.)

MACHINES, Gear Tooth Chamfering

Betts Machine Co., Rochester, N. Y. "Ingle."

Cross Gear & Engine Co., 3260 Bellevue Ave., Detroit, Mich. (See page 1191.)

Ingle—See Betts Machine Co.

Schuchardt & Schutte, 90 West St., New York, N. Y. (Importers.)

Walker Machinery Co., Chas. H., 709 Loraine Ave., Detroit, Mich.

MACHINES, Hair Picking

Atlas—See Curtis & Marble Machine Co.

Atlas—See Lounsbery & Sons.

Curtis & Marble Machine Co., 72 Cambridge St., Worcester, Mass. "Atlas."

Empire—See Lounsbery & Sons.

Lounsbery & Sons, G. H., 107-09 W. Third St., Cincinnati, O. "Atlas," "Empire."

Prize—See Willcomb Co.

Willcomb Co., Geo., 62 Chardon St., Boston, Mass. "Prize."

MACHINES, HAND SCREW—See Machines, Screw

MACHINES, HINGE FORMING—See Machines, Hood Hinge Forming

MACHINES, HOBBING—See Machines, Gear Hobbing

MACHINES, Hood Hinge Forming

Yoder Co., Walworth Ave. & 58th St., Cleveland, O.

MACHINES, HORIZONTAL BORING—See Machines, Boring

MACHINES, HUB BORING—See Machines, Aircraft Propeller Hub Boring

MACHINES, Lead Burning

Fidelity Brass Mfg. Co., 1001 W. Washington St., Chicago, Ill.

Torchweld Equipment Co., 224 N. Carpenter St., Chicago, Ill.

Waterhouse Welding Co., 15 Pelham St., Boston, Mass.

MACHINES, Leaf Spring Straightening

Lauer Machine Co., John, 620-26 Antoine St., Detroit, Mich.

MACHINES, Leather Measuring

Nightingale, J. E., 15 Mill St., Danvers, Mass.

Tufting Machine Supply Co., 406 E. Jefferson Ave., Detroit, Mich.

Turner Tanning Machinery Co., Peabody, Mass.

MACHINES, Louvre Forming

Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill.

MACHINES, Metal Testing

(For Metal Testing Instruments—See Instruments, Metal Testing)

Brinell—See Hols, Herman A.

Hols, Herman A., 17 Madison Ave., New York, N. Y. "Brinell."

Olsen Testing Machine Co., Tinius, 500 N. 12th St., Philadelphia, Pa.

Pittsburgh Instrument & Machine Co., 40 Water St., Pittsburgh, Pa.

MACHINES, Milling

Adams Co., 295 Sixth St., Dubuque, Ia.

American Milling Machine Co., Richmond St. & McLean Ave., Cincinnati, O.

Beaman & Smith Co., 20 Gordon Ave., Providence, R. I.

Becker Milling Machine Co., 53 Franklin St., Boston, Mass.

Briggs—See Gooley & Edlund.

Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.

Burke Machine Tool Co., Sandusky St., Conneaut, O.

Carter & Hakes Machine Co., Winsted, Conn.

Cincinnati Milling Machine Co., 18511 Euclid Ave., Cincinnati, O.

Cleveland Milling Machine Co., 18511 Euclid Ave., Cleveland, O.

Cleveland Welding Machine Co., of The Hydraulic Steel Co., Cleveland, O.

Conradson Machine Tool Co.—See Ryerson & Son.

Davenport Mfg. Co., W. College St., Meadville, Pa.

Dow Mfg. Co., 131 Adams St., Braintree, Mass.

Flannery Co., P. J., 33 Whiting St., New Britain, Conn.

Fox Machine Co., 1811 W. Ganson St., Jackson, Mich.

Garvin Machine Co., Spring & Varick Sts., New York, N. Y.

Gooley & Edlund, Huntington St., Cortland, N. Y. "Briggs."

Hendey Machine Co., 105 Summer St., Torrington, Conn.

Ingersoll Milling Machine Co., Douglas & Willoughby Sts., Rockford, Ill.

Inman Co., H. A., Newark, N. Y.

Kearney & Trecker Co. (West Allis), Milwaukee, Wis.

Kempsmith Mfg. Co. (West Allis), Milwaukee, Wis.

Knight Machinery Co., W. B., 3920 W. Pine St., St. Louis, Mo.

Kriesel—See Mill City Co.

Le Blond Machine Tool Co., R. K., Madison & Edwards Rds., Cincinnati, O.

Lucas Machine Tool Co., 523 E. 99th St., Cleveland, O. "Precision."

McCrosky Tool Corp., Meadville, Pa.

Mill City Co., Minneapolis, Minn. "Kriesel."

Milwaukee—See Kearney & Trecker Co.

Niles-Bement-Pond Co., 111 Broadway, New York, N. Y.

Oesterlein Machine Co., 2850 Spring Grove Ave., Cincinnati, O. "Ohio."

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MACHINES, Milling (Continued)

Ohio—See Oesterlein Machine Co.

Precision—See Lucas Machine Tool Co.

Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 339.)

Rockford Milling Machine Co., Harrison Ave & 11th St., Rockford, Ill.

Ryerson & Son, Joseph T., Chicago, Ill. (Sole Distributors for Conradson Machine Tool Co., Green Bay, Wis.)

Sloan & Chace Mfg. Co., 351 Sixth Ave., Newark, N. J.

Steptoe Co., John, 2961 Colerain Ave., Cincinnati, O.

Taylor & Fenn Co., 54-70 Arch St., Hartford, Conn.

Toledo Milling Machine Co., Toledo, O.

Thurston Mfg. Co., 140 Benedict St., Providence, R. I.

U. S. Hammered Piston Ring Co., 1206 S. Grove St., Irvington, N. J.

United States Machine Tool Co., Richmond St. & McLean Ave., Cincinnati, O.

Valley City Machine Works, 12-16 Campau Ave., N. W., Grand Rapids, Mich.

Van Norman Machine Tool Co., 160 Wilbraham Ave., Springfield, Mass.

Whitney Mfg. Co., Hartford, Conn. (See page 231.)

MACHINES, MORTISING—See Machines, Wood Mortising

MACHINES, MOTOR DECARBONIZING—See Machines, Engine Decarbonizing

MACHINES, PICKING—See Machines, Hair Picking

MACHINES, PROPELLER BEAD SHAPING—See Machines, Aircraft Propeller Blade Shaping

MACHINES, PROPELLER HUB BORING—See Machines, Aircraft Propeller Hub Boring

MACHINES, PROPELLER TOOTHING—See Machines, Aircraft Propeller Toothing

MACHINES, REBORING—See Machines, Cylinder Reboring

MACHINES, RUBBING—See Machines, Body Rubbing

MACHINES, Screw

(Automatic)

Acme—See National Acme Co.

Automatic Machine Co., 113 E. Washington Ave., Bridgeport, Conn.

Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.

Chicago Automatic Machine Co., 400-08 N. Oakley Blvd., Chicago, Ill.

Cincinnati Automatic Machine Co., 3120 South St. (Oakley), Cincinnati, O. "Hayden."

Cleveland Automatic Machine Co., 2269 Ashland Rd., Cleveland, O.

Davenport Machine Tool Co., 167 Ames St., Rochester, N. Y.

Greenfield Tap & Die Corp., Greenfield, Mass. (See page 927.)

Hartford Machine Screw Co., Hartford, Conn. (See page 839.)

Hayden—See Cincinnati Automatic Machine Co.

National Acme Co., Cleveland, O. "Acme," "Gridley." (See page 657.)

New Britain Machine Co., Chestnut St., New Britain, Conn.

Peerless Automatic Machine Co., 1970 W. 77th St., Cleveland, O.

Potter & Johnston Machine Co., 1085 Newport Ave., Pawtucket, R. I.

Smurr & Kamen Co., 323 N. Albany Ave., Chicago, Ill.

Springfield Automatic Screw Machine Corp., Fitchburg, Mass.

Townsend Mfg. Co., H. P., 8 Hoadley Pl., Hartford, Conn.

Wood Turret Machine Co., S. Alabama St., Brazil, Ind.

MACHINES, Screw

(Hand)

Acme Machine Tool Co., 4955 Spring Grove Ave., Cincinnati, O.

Bardons & Oliver, 1133 W. Ninth St., Cleveland, O.

Dreses Machine Tool Co., 227-29 W. McMicken Ave., Cincinnati, O.

Garvin Machine Co., Spring & Varick Sts., New York, N. Y.

Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 339.)

Rivett Lathe & Grinder Co., 20 Riverview Rd. (Brighton), Boston, Mass.

Warner & Swasey Co., 5701 Carnegie Ave., Cleveland, O.

MACHINES, Screw Driving

Hergi Mfg. Co., Bridgeport, Conn.

McKay Co., Geo. C., 1046 St. Clair Ave., Cleveland, O.

Reynolds Machine Co., Massillon, O.

MACHINES, SPRING STRAIGHTENING—See Machines, Leaf Spring Straightening

MACHINES, Spring Testing

Olsen Testing Machine Co., 500 N. 12th St., Philadelphia, Pa.

MACHINES, STITCHING—See Machines, Double Tread Tire Stitching

MACHINES, Tapping

Anderson Die Machine Co., 544 Iranston Ave., Bridgeport, Conn.

Baker Bros., Westlake Ave. & Post St., Toledo, O.

Barnes Drill Co., 814-30 Chestnut St., Rockford, Ill.

Burke Machine Tool Co., Sandusky St., Conneaut, O.

Garvin Machine Co., Spring & Varick Sts., New York, N. Y.

National Lathe Co., 11-15 W. Second St., Cincinnati, O.

Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 339.)

Rickert-Shafer Co., 613 W. 11th St., Erie, Pa.

St. Louis Machine Tool Co., 922-32 Loughborough Ave., St. Louis, Mo.

Workwell Engineering & Mfg. Co., 616-20 W. Monroe St., Chicago, Ill.

MACHINES, TENONING—See Machines, Wood Mortising

MACHINES, TESTING—See Machines, Metal Testing; also Machines, Spring Testing

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Laidlaw Leather Cloth
Laidlaw Hair Carpet
Laidlaw Slip Cover Cloth

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Miller, Chas. E., 1400 S. Meridian St., Anderson, Ind.

Pierce Wrapping Machine Co., 617 W. Jackson Blvd., Chicago, Ill.

Rossman, Roy G., 1524 12th Ave., Seattle, Wash.

Terkelsen & Wennberg, 326 A St., Boston, Mass.

Thropp's Sons Co., John E., Trenton, N. J.

MACHINES, TIRE CHAIN REPAIR—See Tools, Tire Chain Repair

MACHINES, TIRE DEFLATING—See Machines, Tube Deflating

MACHINES, Tire Inspecting

(For spreading the shoe or opening it to permit more careful examination of the inner surface; for Tire Spreading Tools—See Tools, Tire Spreading)

Kehawke Mfg. Co., 1006 W. Lake Ave., Minneapolis, Minn.

Ramsdell Bros.—See Timco Co.

Robertson, W. H., 228 N. Church St., Rockford, Ill.

Timco Co., Schofield Bldg., Cleveland, O. (Sole Distributors for Ramsdell Bros., Cleveland, O.)

MACHINES, Tire Removing and Replacing

Vance Engineering Co., 1949 E. 75th St., Chicago, Ill.

Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 735.)

MACHINES, Tire Skiving

(For skiving the beads off all tires to permit their use as inner liners)

American Shoe Machinery & Tool Co.—See R. T. Sales Co.

Maxwell Mfg. Co., 115 E. Murdock Ave., Wichita, Kans.

P. S. M. Co., Minneapolis, Minn. "Progressive."

Progressive—See P. S. M. Co.

R. T. Sales Co., 226 N. Adams St., Green Bay, Wis. (Sole Distributors for American Shoe Machinery & Tool Co., St. Louis, Mo.)

MACHINES, TIRE STITCHING—See Machines, Double Tread Tire

MACHINES, TOOTH CHAMFERING—See Machines, Gear Tooth Chamfering

MACHINES, Top Bow Dressing

Buob & Scheu, 500-10 Webster Ave., Cincinnati, O. "Peerless." (See page 325.)

Peerless—See Buob & Scheu.

MACHINES, TREAD STITCHING—See Machines, Double Tread Tire

MACHINES, Tube Deflating and Valve Removing

Barton Mfg. Co., 800 N. Saginaw St., Flint, Mich. "Jiffy."

Jiffy—See Barton Mfg. Co.

P. S. M. Co., Minneapolis, Minn.

MACHINES, TUFTING—See Machines, Upholstery Tufting

MACHINES, Upholstery Button

Handy—See Tufting Machine Supply Co.

Lounsbery & Sons, G. H., 107-09 W. Third St., Cincinnati, O.

Reliable—See Tufting Machine Supply Co.

Tufting Machine Supply Co., 406 E. Jefferson Ave., Detroit, Mich. "Handy," "Reliable."

MACHINES, Upholstery Tufting

Buser-Poston Tufting Machine Co., Chillicothe, O.

Novelty—See Tufting Machine Supply Co.

Tufting Machine Supply Co., 406 E. Jefferson Ave., Detroit, Mich. "Novelty."

MACHINES, Valve Seating and Grinding

(For Valve Seating Tools—See Tools, Valve Grinding)

Arnold Electric Tool Co., New London, Conn. (See page 371.)

B. F. S. Mfg. Co., 54 Hermon St., Worcester, Mass.

Bean—See Liberty Metal Products Co.

Bilt-Rite Products Sales Co., Worcester, Mass.

Black & Decker Mfg. Co., Towson Heights, Baltimore, Md.

Cedar Rapids Engineering Co., 902 N. 17th St., Cedar Rapids, Iowa. "Kwik-way."

Eclipse Valve Grinder Co., Oak St. at 20th, Kansas City, Mo. (See page 619.)

Foote-Burt Co., 4101 St. Clair Ave., Cleveland, O.

Franklin Machine & Tool Co., Springfield, Mass. (See page 1205.)

Fry Mfg. Co., B. L., 2224 N. Ninth St., St. Louis, Mo.

Jackson—See Kalamazoo Railway Supply Co.

Kalamazoo Railway Supply Co., Kalamazoo, Mich. "Jackson."

Kwik-Way—See Cedar Rapids Engineering Co.

Liberty Metal Products Co., Front St. & First Ave., Berea, O. "Bean."

Stenman Electric Tool Co., 42 Southbridge St., Worcester, Mass.

Taylor & Fenn Co., 54-70 Arch St., Hartford, Conn.

Turbine Air Tool Co., 710 Huron Rd., Cleveland, O.

United States Electrical Tool Co., Cincinnati, O. "U. S." (See page 373.)

Veltum & Clow—See Warnock-Wirth Sales Co.

Warnock-Wirth Sales Co., 616 S. Michigan Ave., Chicago, Ill. (Sole distributors for Veltum & Clow, Eugene, Ore.)

MACHINES, VERTICAL BORING—See Machines, Boring

MACHINES, WELDING—See Machines, Autogenous Welding; also Machines, Electric Welding

MACHINES, WIRING — See Machines, Fender Wiring

MACHINES, WIRE WRAPPING—See Machines, Aircraft Wire Wrapping

MACHINES, Wood Bending

Defiance Machine Works, 434 Perry St., Defiance, O.

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American Wood Working Machinery Co., 591 Lyell Ave., Rochester, N. Y.
Bentel & Margedant Co., Hamilton, O.
Cordesman, Meyer & Co., 53-57 Central Ave., Cincinnati, O.
Cordesman-Rechtin Co., 215 Butler St., Cincinnati, O.
Defiance Machine Works, 434 Perry St., Defiance, O.
Fay & Egan Co., J. A., 415 W. Front St., Cincinnati, O.
Jones Superior Machine Co., 1258-72 W. North Ave., Chicago, Ill.
Kane & Roach, Niagara & Shonnard Sts., Syracuse, N. Y.
Ober Mfg Co., Chagrin Falls, O
Oliver Machinery Co., 1025 Clancy St., N. E., Grand Rapids, Mich.
Power & Co., L., 30 S. 23d St., Philadelphia, Pa.
Pryibil Machine Co., P., 512-24 W. 41st St., New York, N. Y.
Root Co., B. M., 30-36 Jefferson Ave., York, Pa.
Smith Machine Co., H. B., Smithville, N. J.
Valley City Machine Works, 12-16 Campau Ave., N. W., Grand Rapids, Mich.

MACHINES, Wood Mortising and Tenoning

American Wood Working Machinery Co., 591 Lyell Ave., Rochester, N. Y.
Cordesman-Rechtin Co., 215 Butler St., Cincinnati, O.
Defiance Machine Works, 434 Perry St., Defiance, O.
Fay & Egan Co., J. A., 415 W. Front St., Cincinnati, O.
New Britain Machine Co., Chestnut St., New Britain, Conn.
Oliver Machinery Co., 1025 Clancy St., N. E., Grand Rapids, Mich.

MACHINES, WRAPPING—See Machines, Tire Bandage Wrapping

MACHINISTS' CLAMPS—See Clamps, Machinists'

MACHINISTS' HAMMERS—See Hammers, Machinists'

MAGNET CHARGERS—See Chargers, Magneto Magnet

MAGNET REMAGNETIZERS—See Chargers, Magneto Magnet

MAGNETIC CHUCKS—See Chucks, Magnetic

MAGNETIC PUMP SYSTEMS—See Systems, Magnetic Pump Gasoline

MAGNETO BRUSHES—See Brushes, Magneto, Starter and Generator

MAGNETO COUPLINGS—See Couplings, Magnetos and Generators

MAGNETO COVERS—See Covers, Magneto

MAGNETO MAGNET CHARGERS—See Chargers, Magneto Magnet

MAGNETO METERS—See Meters, Magneto

MAGNETO METERS FOR FORDS—See Meters, Magneto

MAGNETO MOUNTING ATTACHMENTS—See Attachments, Magneto Mounting

MAGNETO PARTS—See Parts, Magneto Coil and Distributor

MAGNETO PLUG HOLDERS FOR FORDS—See Holders, Magneto Plug

MAGNETO WINDINGS—See Windings

MAGNETOS, Aircraft Ignition

American Bosch Magneto Corp. (Brightwood), Springfield, Mass. "Bosch."
American Swiss Magneto Co., 1682 Fernwood Ave., Toledo, O. "Swiss."
Apollo Magneto Co., Grand St., Kingston, N. Y.
Berkshire Magneto Co., 70 West St., Pittsfield, Mass. "Liberty."
Berling—See Ericsson Mfg. Co.
Bosch—See American Bosch Magneto Corp.
Eisemann Magneto Corp., 32 33rd St., Brooklyn, N. Y. (See page 621.)
Ericsson Mfg. Co., Buffalo, N. Y. "Berling."
K-W Ignition Co., 2900 Chester Ave., Cleveland, O. (See page 621.)
Lauraine Magneto Co., Long Island City, N. Y.
Liberty—See Berkshire Magneto Co.
Ohmer—See Recording & Computing Machines Co.
Recording & Computing Machines Co., Dayton, O. "Ohmer."
Remy Electric Co., 1628 E. Grand Blvd., Detroit, Mich.
Simms Magneto Co., Arlington Ave., East Orange, N. J.
Splitdorf Electrical Co., 88 Warren St., Newark, N. J.
Swiss—See American Magneto Co.

MAGNETOS, Ignition

American Bosch Magneto Corp. (Brightwood), Springfield, Mass. "Bosch."
American Swiss Magneto Co., 1682 Fernwood Ave., Toledo, O.
Apollo Magneto Co., Grand St., Kingston, N. Y.
Berkshire Magneto Co., 70 West St., Pittsfield, Mass.
Berling—See Ericsson Mfg. Co.
Bosch—See American Bosch Magneto Corp.
Carter-Long Magneto Co., North Chicago, Ill. "Lenox."
Eisemann Magneto Corp., 32 33d St., Brooklyn, N. Y. (See page 621.)
Ericsson Mfg. Co., Buffalo, N. Y. "Berling."
Heco—See Heinze Electric Co.
Heinze Electric Co., Lawrence St., Lowell, Mass. "Heco."
K-W Ignition Co., 2900 Chester Ave., Cleveland, O. (See page 621.)
Kingston—See Kokomo Electric Co.
Kokomo Electric Co., 1450 N. Webster St., Kokomo, Ind. "Kingston."
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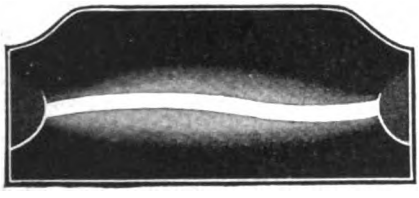

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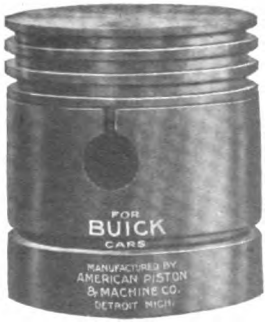

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MAGNETOS, Ignition (Continued)

National Coil Co., 221 N. Cedar St., Lansing, Mich.

National Ignition Co., Irvington-On-Hudson, N. J. "Natco."

Ohmer—See Recording & Computing Machines Co.

Recording & Computing Machines Co., Dayton, O. "Ohmer."

Remy Electric Co., 1623 E. Grand Blvd., Detroit, Mich.

Rogers—See Vita Mfg. Co.

Simms Magneto Co., 277 N. Arlington Ave., East Orange, N. J.

Simplex Magneto Co., 1790 Broadway, New York, N. Y.

Splitdorf Electrical Co., 98 Warren St., Newark, N. J.

Standard Ignition Co., Elkhart, Ind.

Teagle Co., 1125 Oregon Ave., Cleveland, O.

Vita Mfg. Co., Williamson Bldg., Cleveland, O. "Rogers."

MAGNETOS, Ignition, for Fords

American Bosch Magneto Corp. (Brightwood), Springfield, Mass. "Bosch."

Apollo Magneto Co., Grand St., Kingston, N. Y.

Bosch—See American Bosch Magneto Corp.

Eisemann Magneto Corp., 32 33d St., Brooklyn, N. Y. (See page 621.)

Splitdorf Electrical Co., 98 Warren St., Newark, N. J.

MAGNETOS, Motor Boat Ignition

American Bosch Magneto Corp. (Brightwood), Springfield, Mass. "Bosch."

American Swiss Magneto Co., 1682 Fernwood Ave., Toledo, O. "Swiss." "Elkhart."

Apollo Magneto Co., Grand St., Kingston, N. Y.

Berkshire Magneto Co., 70 West St., Pittsfield, Mass.

Berling—See Ericsson Mfg. Co.

Bosch—See American Bosch Magneto Corp.

Eisemann Magneto Corp., 32 33d St., Brooklyn, N. Y. (See page 621.)

Elkhart—See American Swiss Magneto Co.

Ericsson Mfg. Co., Buffalo, N. Y. "Berling."

K-W Ignition Co., 2900 Chester Ave., Cleveland, O. (See page 621.)

Lauraine Magneto Co., Long Island City, N. Y.

Motsinger Device Mfg. Co., 26th & Ferry Sts., Lafayette, Ind.

National Coil Co., 221 N. Cedar St., Lansing, Mich.

Ohmer—See Recording & Computing Machines Co.

Recording & Computing Machines Co., Dayton, O. "Ohmer."

Simms Magneto Co., 277 N. Arlington Ave., East Orange, N. J.

Splitdorf Electrical Co., 98 Warren St., Newark, N. J.

Swiss—See American Swiss Magneto Co.

MAGNETOS, Motorcycle Ignition

American Bosch Magneto Corp. (Brightwood), Springfield, Mass. "Bosch."

American Swiss Magneto Co., 1682 Fernwood Ave., Toledo, O. "Elkhart."

Apollo Magneto Co., Grand St., Kingston, N. Y.

Berling—See Ericsson Mfg. Co.

Bosch—See American Bosch Magneto Corp

Eisemann Magneto Corp., 32 33d St., Brooklyn, N. Y. (See page 621.)

Elkhart—See American Swiss Magneto Co.

Ericsson Mfg. Co., Buffalo, N. Y. "Berling."

Lauraine Magneto Co., Long Island City, N. Y

National Coil Co., 221 N. Cedar St., Lansing, Mich.

Simms Magneto Co., 277 N. Arlington Ave., East Orange, N. J.

Splitdorf Electrical Co., 98 Warren St., Newark, N. J.

MAGNETOS, Tractor Ignition

American Bosch Magneto Corp. (Brightwood), Springfield, Mass. "Bosch."

American Swiss Magneto Co., 1682 Fernwood Ave., Toledo, O. "Swiss."

Apollo Magneto Co., Grand St., Kingston, N. Y.

Berkshire Magneto Co., 70 West St., Pittsfield, Mass.

Berling—See Ericsson Mfg. Co.

Bosch—See American Bosch Magneto Corp.

Eisemann Magneto Corp., 32 33rd St., Brooklyn, N. Y. (See page 621.)

Ericsson Mfg. Co., Buffalo, N. Y. "Berling."

K-W Ignition Co., 2900 Chester Ave., Cleveland, O. (See page 621.)

Lauraine Magneto Co., Long Island City, N. Y.

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MAIN BEARING JIGS—See Jigs, Main Bearing and Connecting Rod Babbittings

MAIN BEARING REAMERS FOR FORDS—See Reamers, Main Bearing and Connecting Rod

MALLEABLE CASTINGS—See Castings, Malleable Iron

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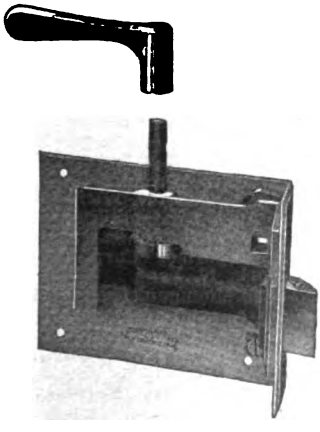

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Champion—See Western Tool & Mfg. Co.

Eastern Tube & Tool Co., 594 Johnson Ave., Brooklyn, N. Y. "Ettco."

Ettco—See Eastern Tube & Tool Co.

Le Count, Wm. G., Merritt St., South Norwalk, Conn.

Morse Twist Drill & Machine Co., 163 Pleasant St., New Bedford, Mass.

Nicholson & Co., W. H., 12 Oregon St., Wilkes-Barre, Pa.

Standard Tool Co., 6900-34 Central Ave., Cleveland, O.

Western Tool & Mfg. Co., Springfield, O. "Champion."

MANDRELS, Inner Tube

Globe Machine & Stamping Co., 1200-50 W. 76th St., Cleveland, O. (See page 1049.)

New Haven Sherardizing Co., 868 Windsor St., Hartford, Conn.

MANGANESE STEEL—See Steel, Manganese

MANIFOLD HEATERS—See Heaters, Mixture

MANIFOLD LOCKS—See Locks, Manifold

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MANIFOLDS, Intake and Exhaust

(Brazed and Welded Manifolds. For Cast Manifolds—See Castings)

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American Metal Products Co., 6431-61 Epworth Blvd., Detroit, Mich. (See page 625.)

American Tube Bending Co., 5-9 Lawrence St., New Haven, Conn.

American Tube Co., 3704 S. Rockwell St., Chicago, Ill.

Bettcher Stamping & Mfg. Co., 3106 W. 61st St., Cleveland, O. (See page 361.)

Cleveland Heater Co., 1900 W. 112th St., Cleveland, O.

Deposited Metal Products Co., 65 Bridge St., Newark, N. J.

Detroit Tube Products Co., 304 S. Junction Ave., Detroit, Mich.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Kent Co., F. C., Irvington, N. J. (See page 1063.)

Monarch Foundry Co., Greenwood & G. T. R. R., Detroit, Mich.

New Jersey Tube Co., Newark, N. J.

Ohio Heating & Pipe Bending Co., 1061-63 W. 11th St., Cleveland, O.

Roberts Brass Co., 249 Lake St., Milwaukee, Wis.

Standard Metal Mfg. Co., 337 Chestnut St., Newark, N. J.

Standard Metalwork Co., 92-108 Prospect St., Thompsonville, Conn.

Standard Parts Co., Cleveland, O. (See page 1149.)

Standard Tool & Mfg. Co., 512 E. Lafayette Blvd., Detroit, Mich.

Tubular Products Co., 53 Railroad Ave., Southington, Conn.

United Wire & Supply Co., 1497 Elmwood Ave., Providence, R. I.

Whittier Co., 2415 S. Michigan Ave., Chicago, Ill. "Wilmo." (See page 625.)

Wilmo—See Whittier Co.

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American Automobile Accessories Co., 1709 Blue Rock St., Cincinnati, O. "3-A-Co."

Anco—See Anderson Co.

Anderson Co., 232 S. St. Joseph St., South Bend, Ind. "Anco."

B. K. F. Corp., 20 E. Jackson Blvd., Chicago, Ill. (See page 963.)

Benjamin Motor Products Co., Dearborn, Mich.

Burn Oil Device Co., 129 N. Jefferson St., Peoria, Ill.

Cooper Foundry Co., Atchison, Kans. "Eureka."

Coppock, A. J., 123 Euclid Ave., W., Detroit, Mich.

Dallas Auto Device Co., 1013 Elm St., Dallas, Tex. "Gasaver."

Eureka—See Cooper Foundry Co.

Frankfort Carburetor Co., Frankfort, Ind.

Gasaver—See Dallas Auto Device Co.

Holley Kerosene Carburetor Co., Vancouver Ave. & P. M. R. R., Detroit, Mich.

J. B. J.—See American Auto Products Co.

J. E. S.—See Kerosene Motor Appliance Co.

Kerosene Motor Appliance Co., 245 W. 55th St., New York. "J. E. S."

Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich. "Ospeco."

National Auto Products Co., 1780-82 Broadway, New York, N. Y. "Thern-Au-Matic."

National Vaporizer Corp., 31 Nassau St., New York, N. Y.

Ospeco—See Michigan Auto Products Co.

Shurnuff Mfg. Co., 3126 Locust St., St. Louis, Mo.

Sunderman Corp., Newburgh, N. Y. (See page 193.)

Thern-Au-Matic—See National Auto Products Co.

3-A-Co—See American Automobile Accessories Co.

Vaporator Mfg. Co., 2739 Washington Ave., St. Louis, Mo.

Whittier Co., 2415 S. Michigan Ave., Chicago, Ill. "Wilmo." (See page 625.)

Wilmo—See Whittier Co.

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Automotive Electrical Sales Co., 2637 S. Michigan Ave., Chicago, Ill. (See page 421.)

Beck & Corbitt, First, Ashley & O'Fallon Sts., St. Louis, Mo. (See page 629.)

Berger & Co., 208 W. 11th St., Los Angeles, Cal. (See page 641.)

Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (See page 345.)

Clucker & Hixson Co., 47 Murray St., New York, N. Y. (See page 1171.)

Denton & Anderson, Engineers' Bldg., Cleveland, O. (See page 1023.)

Diebel, A. J., 976 Woodward Ave., Detroit, Mich. (See page 543.)

F. H. & S. Co., 624 S. Michigan Ave., Chicago, Ill. (See page 527.)

Faw, J. H., 27 Warren St., New York, N. Y. (See page 421.)

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (See pages 687 to 690.)

Levin, A. L., 1834 Broadway, New York, N. Y. (See page 57.)

Martin, Jas., 130-34 W. 52nd St., New York, N. Y. (See page 629.)

Mooers-Wright Co., 1400 Broadway, New York, N. Y. (See page 1167.)

Motor Electrical Equipment Co., 1251 S. Michigan Ave., Chicago, Ill. (See page 673.)

New England Mills Co., 1027 W. Van Buren St., Chicago, Ill. (See page 143.)

Paul-Irving Co., 1194-96 Bushwick Ave., Brooklyn, N. Y. (See page 677.)

Reinhard Bros. Co., 11-13 S. Ninth St., Minneapolis, Minn. (See page 659.)

Staff, J. Wadsworth, 122 S. Michigan Blvd., Chicago, Ill. (See pages 1177 and 1193.)

Tuthill Sales Co., St. Louis, Mo. (See page 629.)

Wilco Co., 172 Griswold St., Detroit, Mich. (See page 221.)

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (See pages 307 to 315.)

MAPS, Road

Automobile Blue Book Publishing Co., 243 W. 39th St., New York, N. Y. (See pages 269 to 272.)

Clason Map Co., 1515 Tremont Pl., Denver, Colo

Iowa Map Co., Observation Bldg., Des Moines, Ia.

King, Sydney J., 626-36 S. Clark St., Chicago, Ill.

Mendenhall, C. S., 406 Elm St., Cincinnati, O.

National Mileometer Co., Marquette Bldg., Detroit, Mich.

Scarborough Motor Guide Co., 32 E. Georgia St., Indianapolis, Ind.

Tib Automobile Route Book Co., Shukart Bldg., Kansas City, Mo.

Walker Lithograph & Publishing Co., 400 Newbury St., Boston, Mass.

MASTER VIBRATORS—See Coils, Spark

MASTER VIBRATORS FOR FORDS—See Vibrators, Master

MAT BINDING—See Binding, Mat and Carpet

MATS, Carpet

(See also Carpet)

Hopewell Bros., Watertown, Mass. (See page 629.)

MATS, Cocoa

(Cocoa or Fiber Mats for car floors; for Cocoa Running Board Mats—See Mats, Running Board)

Bantam—See Tyler Mfg. Co.

Darragh, Small & Co., 177 Water St., New York, N. Y.

Glenfield—See Wehn Son & Co.

Kempf & Son., Wm. F., 1027-33 N. Fourth St., Philadelphia, Pa.

Koko Mat Co.—See Mooers-Wright Co.

McCabe & Bro., Benj., 37 E. 18th St., New York, N. Y.

Mat Co., Muskegon, Mich. (See pages 627 and 628.)

Mooers-Wright Co., 1400 Broadway, New York, N. Y. (Factory Sales Agents for Koko Mat Co., New York, N. Y.) (See page 1167.)

Tyler Mfg. Co., 755 Boylston St., Boston, Mass. "Bantam."

Rancocas Mills, Trenton, N. J.

Wehn Son & Co., Geo., Glenfield, Pa. "Glenfield."

Wisconsin Mat Co., 392-94 Sixth St., Milwaukee, Wis.

MATS, Floor Board, for Fords

(Molded or formed rubber, leather or metal mats)

Bantam—See Tyler Mfg. Co.

Everware Rubber Co., 241 Oregon St., Milwaukee, Wis.

Federal Rubber Co., (Cudahy), Milwaukee, Wis.

Fernald Mfg. Co., North East, Pa.

Goodrich Co., B. F., S. Main St., Akron, O.

Hercules—See Ray Fabric Mills.

Mayo & Co., F. A., Boston, Mass.

Mechanical Rubber Co., 307 W. Randolph St., Chicago, Ill.

Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 321.)

Ray Fabric Mills, Franklin, Mass. "Hercules."

Spiro Mfg. Co., C., 68-72 E. 131st St., New York, N. Y. "Uniq."

Tyler Mfg. Co., 755 Boylston St., Boston, Mass. "Bantam."

Uniq—See Spiro Mfg. Co.

Wisconsin Mat Co., 392-94 Sixth St., Milwaukee, Wis.

MATS, Leather

Brockton Heel Co.—See F. A. Sales Co.

F. A. Sales Co., 253 Fifth Ave., New York, N. Y. (Sole Distributors for Brockton Heel Co., Brockton, Mass.)

H. & C.—See Winship, W. W.

Winship, W. W., 71 Summer St., Boston, Mass. "H. & C."

MATS, LINOLEUM—See Linoleum

MATS, Rubber

(Rubber Mats and Matting for car floors or running boards)

Boston Belting Co., 34 Linden Park St., Boston, Mass.

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Easier to Sell and Why

Every month more than a million users and prospective users of automobile running board mats are reading our message.

We are not advertising just cocoa fibre running board mats but are concentrating attention on one mat and its name—"Never-Slip."

As the season progresses our advertising campaign to the consumer will hammer the message home until "Never-Slip" will signify running board mats and the demand will concentrate on that name. Dealers will do well to make their arrangements accordingly. Already car owners are specifying "Never-Slip," the trademarked cocoa fibre running board mat and the only one.

Distributors listed on the following page—they cover the country and the world—can supply any demand. Get in touch with them now.

THE MAT COMPANY

MUSKEGON, MICH.

CHICAGO BRANCH—1116 LYTTON BLDG.

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"Never-Slip" Distributors

—There's One Near You—Use Him

Alabama

Birmingham—Moore-Handley Hardware Co.
Mobile—McGowan, Lyons Hardware Co.

Arizona

Phoenix—Western Auto Supply Agency, 315 N. Central Ave.

Arkansas

Fort Smith—Atkinson Williams Hardware Co.

California

Los Angeles—E. A. Featherstone.
McCoy Motor Supply Co., 1020 S. Los Angeles St.
Times Square Auto Supply Company, 941 So. Los Angeles St.
San Francisco—Chanslor & Lyon Co., 1238 Van Ness Ave.
Dunham, Carrigan & Hayden Co.
Beckley Ralston Co., 449 Turk St.
Holbrook, Merrill & Stetson
W. E. & W. H. Jackson, 865 Mission St.
McCoy Motor Supply Co., 1524 Bush St.
Times Square Auto Supply Company, 758 Mission St.
Weinstock-Nichols Co., 538 Golden Gate Ave.

Colorado

Denver—Auto Equipment Co., 14th & Lawrence Streets.
Foster Automobile Supply Co., 138 16th St.
B. K. Sweeney Electrical Co.
Western Auto Supply Agency, 1560 Broadway.
Pueblo—Motor Accessory & Tire Co.

Connecticut

Hartford—Alling Rubber Co.
Meriden—Alling Rubber Co.
New Haven—Alling Rubber Co.
Sam Schwartz Co., 19 Doswell Ave.

Delaware

Wilmington—Delaware Hardware Co.

District of Columbia

Washington—Rudolph & West Co., 1332 New York Ave., N. W.
Southern Automobile Supply Co., 1232 Penn Ave., N. W.

Florida

Tampa—G. Norman Baughman Co.
Knight & Wall Co.

Georgia

Albany—Ferrell-Wight Co., 106 North St.
Macon—Merritt Hardware Co.

Idaho

Pocatello—Salt Lake Hardware Co.

Illinois

Chicago—Automobile Supply Co., 1335 S. Michigan Blvd.
Auto Tire Sales Co., 1346 S. Michigan Blvd.
Beckley-Ralston Co., 1801 S. Michigan Blvd.
Chicago Automobile Supply House, 1349 Michigan Blvd.
Chicago Auto Equipment Co., 808 W. Jackson Blvd.
Hine-Watt Mfg. Co., 180 N. Market St.
John C. Hoof & Co., 157 W. Illinois St.
Sheridan Auto Supply Co., 3925 Sheridan Road.
Times Square Auto Supply Company, 1210 Michigan Ave.
Times Square Auto Supply Company, 3900 Sheridan Road.
Times Square Auto Supply Company, 21 W. Jackson Blvd.
Decatur—Morehouse & Wells Co.
Washington—Washington Automobile & Supply Company.

Indiana

Fort Wayne—R. M. Kaough & Co., 224 W. Main Street.
Huntington—Huntington Motor Supply Co.
Indianapolis—Indianapolis Saddlery Co.
La Fayette—Columbia Tire & Supply Co., 427 Columbia St.
Logansport—Charles Young & Son.
South Bend—Howard Cranfill Co., 221 S. Main St.
Terre Haute—Terre Haute Automobile Co.

Iowa

Burlington—Times Square Auto Supply Company, Corner Main & Valley Sts.
Cedar Rapids—Cedar Rapids Pump Co.
Des Moines—Herring Motor Co.
Hopper States Co., 704 Mulberry St.
Times Square Auto Supply Company, 9th and Locust Sts.
Sioux City—Schultz Auto Supply Co.
Times Square Auto Supply Company, N. W. Cor. 6th and Nebraska.
Waterloo—Repass Automobile Co.

Kansas

Atchison-Blish, Mize & Sulhman Hardware Co.
Hutchinson—The Auto Supply Co., 114 Sherman Street.
Topeka—W. A. L. Thompson Hardware Co.
Wichita—Johnson Bros. Auto Supply Co.
Motor Equipment Co.
Times Square Auto Supply Company, 140 N. Main St.

Kentucky

Louisville—Harbison & Gathright, 709 W. Main Street.

Louisiana

Monroe—Monroe Automobile & Supply Co.
New Orleans—Southern Hardware & Woodstock Co., 711 Baronne St.
Shreveport—Thomas Ogdvie Hardware Co.

Maine

Portland—James Bailey Co., 18 Fru St.
W. E. & B. J. Harmon, 226 Middle St.

Maryland

Baltimore—Baltimore Gas Light Co., 307 Redwood Ave.
Piet Robertson-Ramey Co., 108 S. Howard St.
Times Square Auto Supply Company, Corner Howard and Franklin Sts.

Massachusetts

Boston—Standard Auto Supply Co., 239 Columbia Avenue.
Times Square Auto Supply Company, 159 Massachusetts Ave.
Holyoke—J. Russell & Co., 361 Dwight St.
Springfield—Forbes & Wallace, 390 Main St.
J. G. Riga & Sons Co., Inc.

Michigan

Bay City—Bay City Tire & Supply Co.
Detroit—Automobile Supply Co., 218 Jefferson Avenue.
Automobile Equipment Co., 225 Jefferson Ave.
E. A. Bowman, 719 John R. St.
Bowman-Gould Co., 842 Woodward Ave.
Beckley-Ralston Co.
Michigan Automotive Supply Co., 229 Jefferson Avenue.
Escanaba—Della Hardware Co.
Flint—Flint Motor Supply Co., 905 S. Saginaw St.
Grand Rapids—Tisch Auto Supply Co.
Kalamazoo—Edwards & Chamberlain.
Lansing—Allen-Sparks Co.
Port Huron—Beard Campbell & Co.
Saginaw—F. E. Doherty, 801 Genesee St.
Morley Brothers.

Minnesota

Duluth—Duluth Auto Supply Co.
Minneapolis—McKay, Gulich Rubber Co.
Times Square Auto Supply Company, 1229 Hennepin Ave.
St. Paul—P. R. L. Hardenbergh & Co., 8th & Wacouta Sts.
G. Sommers & Company.
Times Square Auto Supply Company, 118 W. Sixth St.
Winona—Minnesota Auto Supply Co.

Mississippi

Natchez—Baker & McDowel Hardware Co.

Missouri

Joplin—Tri State Auto Supply Co.
Kansas City—Motor & Machinists Supply Co.
Peake Auto Supply Co.
Western Auto Supply Co., 1422 Grand Ave.
Times Square Auto Supply Company, 14th and Grand Ave.
St. Louis—Beck & Corbit Iron Co., 1232 N. Main Street.
J. B. Sickles Saddlery Co., 2102 Washington Avenue.
Times Square Auto Supply Company, 1129-1131 Locust St.

Montana

Butte—Bertram Motor Supply Co., 224 S. Main Street.

Nebraska

Omaha—Lee-Colt Andressen Hardware Co.
Powell Supply Company.

Nevada

Reno—Nevada Auto Supply Co.

New Hampshire

Concord—Thompson & Hoague Co.

New Jersey

Atlantic City—Cuskaden Auto Supply Co., 2006 Atlantic Ave.
Newark—Times Square Auto Supply Company, Broad near Market St.

New York

Albany—Times Square Auto Supply Company, 443-445 Broadway.
Brooklyn—Times Square Auto Supply Company, 1060 Flatbush Ave.
Buffalo—James G. Barclay, 715 Main St.
Jos. Strauss Co., 215 Genesee St.
Times Square Auto Supply Company, 917-919 Main St.
Binghamton—C. L. & C. R. Heath Co., 28 Henry Street.
Elmira—Barker-Rose & Clinton Co., 109 Lake St.
Malone—H. D. Thompson & Co.
New York—Beckley-Ralston Co., 328 W. 34th St.
A. S. Canton & Co., 335 Broadway.
R. K. Carter & Co., 66 Reade St.
Chatfield Auto Supply Co., 312 W. 52nd St.
A. J. Picard & Co., 9 W. 61st St.
Times Square Auto Supply Company, Broadway at 56th St.
Times Square Auto Supply Company, 90 Chambers St.
Times Square Auto Supply Company, 78 Nassau St.
Rochester—Rochester Automotive Equipment Co.
Times Square Auto Supply Company, 121-123 East Ave.
Saranac Lake—Geo. L. Starks & Co.
Syracuse—The Olmstead Company, Inc.
Syracuse Auto Supply Co., 311 S. Warren St.
Yonkers—Times Square Auto Supply Company, 38 Warburton Ave.

North Carolina

Charlotte—Carolina Auto Supply House, 221 College St.
Raleigh—Interstate Motor Equipment Co., 417 Fayetteville St.

North Dakota

Fargo—J. D. Grant, 12 Roberts St.

Ohio

Cincinnati—I. J. Cooper Rubber Co., 8th & Main Street.
Kruse Hardware Co., 518 Baymiller St.
Ohio Rubber Co.
Times Square Auto Supply Company, 418 Main St.
Cleveland—Banner Tire & Supply Co., 1901 Euclid Avenue.
Excelsior Auto Supply Co., 1812 Euclid Ave.
The M. & M. Company, 500 Prospect.
Geo. Worthington Co., 832 St. Clair Ave.
Columbus—Justus & Parker Co., 129 E. Gay St.
Smith Bros. Hardware Co.
Times Square Auto Supply Company, 137 S. High St.
Dayton—Dayton Iron & Steel Co., 119 E. Third Street.
Greenville—York Supply Co.
Mansfield—Wagner Hardware Co.
Toledo—Times Square Auto Supply Company, 804 Madison Ave.
Youngstown—Stambaugh-Thompson Co.

Oklahoma

Oklahoma City—J. B. Burwell Supply Co., 323 N. Broadway.
Severin Tire & Supply Co., 5th St. at Broadway.
Tulsa—Tulsa Motor Supply Co.
Times Square Auto Supply Company, 213 E. Boston St.

Oregon

Portland—Winters & Brookings, 65 6th St.

Pennsylvania

Allentown—F. Hersh Hardware Co.
Erie—United Hardware & Supply Co.
Harrisburg—Front Market Motor Supply Co.
Lancaster—General Auto Supply Co., 117 E. King Street.
Philadelphia—J. H. McCullough & Son, 219 N. Broad St.
Geo. W. Nock Co., 1304 Race St.
Standard Supply & Equipment Co., Cherry & 13th Sts.
Supplee-Biddle Hardware Co., 507 Commerce Street.
Times Square Auto Supply Company, Broad & Vine Sts.
Philipsburg—Philipsburg Hardware Co.
Pittsburgh—Times Square Auto Supply Company, 414 Wood St.
Pottsville—Geo. M. Biehl, 204 S. Center St.
Scranton—American Auto Supply Co.
Samuel Weinberg Auto Supply Co., 300 Penn Avenue.

Rhode Island

Providence—Waite Auto Supply Co., 64 Exchange Place.
Times Square Auto Supply Company, Fountain & Aborn Sts.

South Carolina

Charleston—The Bailey-Libby Co., 182 Meeting Street.
Cameron & Barkley Co., 160 Meeting Street.
Columbia—Carolina Tire & Accessory Co., 2001 Main St.
Lorick & Lowrance.

South Dakota

Sioux Falls—L. & L. Motor Supply Co.

Tennessee

Nashville—Auto Supply Co., 1107 Broadway.
Buford Brothers.
Keith-Simmons & Co.
Memphis—Times Square Auto Supply Company, Monroe & Fourth Sts.

Texas

Beaumont—Rupert Cox Auto Supply Co., 115 Pearl St.
F. L. Wilson Hardware Co.
Dallas—Ferris-Dunlap Auto Supply Co., 2029 Commerce St.
Fisk Company of Texas, 2000 Commerce St.
Southern Equipment Company.
Times Square Auto Supply Company, Commerce & Hardwood Sts.
El Paso—Borderland Auto Supply Co., 363 Myrtle Avenue.
Waco—McCauley Ward Motor Supply Co.

Utah

Salt Lake City—Inter-Mountain Electric Co.
The Salt Lake Hardware Co.

Vermont

Rutland—Fremer Auto Supply Co.

Virginia

Danville—Owens-Merritt Co.

Washington

Seattle—Ballou & Wright, 1515 12th Ave.
Spokane—Holley-Mason Hardware Co.

West Virginia

Wheeling—T. T. Hutchisson & Co., 1222 Main St.

Wisconsin

Green Bay—Morley-Murphy Hardware Co.
Madison—Shelko, 210 E. Washington Ave.
Milwaukee—Auto Supply Co., 134 Second St.
Times Square Auto Supply Company, Corner Wells and Second Sts.
Wm. Frankforth Hardware Co.
Western Motor Supply Co., 408 Jefferson St.

EXPORTERS
Chicago, Ill.

Commercial Export Corp., 329 Plymouth Court.

New York City

Dodge & Seymour, Ltd., 193 West St.
Chas. F. Lyngaas, 46 W. Broadway.
Thomsen & Company, 90-96 Wall St.

The MAT COMPANY **MUSKEGON MICHIGAN**

Chicago Branch—1116 Lytton Bldg.

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FIRESTONE RIMS

AUTOMOTIVE EQUIPMENT AND SUPPLIES
FOR
MOTOR CAR — TRUCK — TRACTOR — MOTOR BOAT — AEROPLANE
MACHINE SHOP — GARAGE — VULCANIZING PLANT
OUTFITTERS

BECK & CORBITT
AUTOMOTIVE EQUIPMENT
FIRST STREET, ASHLEY TO O'FALLON ST. LOUIS, MO.

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SERVICE STATION EQUIPMENT

Attention, Manufacturers!
Have You Satisfactory Representation in the Southwest?
We operate a Factory Branch in Middle States For
Tuthill Spring Company
Central Brass & Fixture Co.
Cuno Engineering Corp.
Osgood Lens & Supply Co.
Gartley-Weston Company
Federal Miniature Lamp Company
Can We Assist You?
Tuthill Sales Company
St. Louis, Mo. Kansas City, Mo.
Successors to
AUTO DEVICES COMPANY, St. Louis, Mo.

HOPEWELL
SUN SHIELD
PROTECTS THE EYES
SUN SHIELD IS INSTANTLY REMOVABLE
NEW
1921 Specialties
HOPEWELL BROTHERS
Watertown, Mass.
SEND FOR CATALOG
HOPEWELL SPRING COVERS
PROTECT AND LUBRICATE

JAS. MARTIN
Manufacturer and Jobber of
TIRES, AUTO ACCESSORIES AND HARDWARE
MARTIN CORD TIRES, Gray and Red Tubes
MONO CORD TIRES, Gray and Red Tubes
NORWALK CORD AND FABRIC TIRES, Gray and Red Tubes
TRIPLEX FABRIC TIRES, Gray and Red Tubes
SOUTH BEND FABRIC TIRES AND ODELL CORDS
JAS. MARTIN, 130 to 134 West 52nd St., NEW YORK

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MATS, Rubber (Continued)

Boston Woven Hose & Rubber Co., Cambridge, Mass. "Lenox," "Tiger."

Bowers Rubber Works, 68-70 Sacramento St., San Francisco, Cal.

Cincinnati Rubber Mfg. Co., Cincinnati, O. (See page 523.)

Combination Rubber Mfg. Co., Bloomfield, N. J.

Empire Rubber & Tire Co., Mulberry St., & Clinton Ave., Trenton, N. J.

Essex Rubber Co., May & Beakes Sts., Trenton, N. J.

Everware Rubber Co., 241 Oregon St., Milwaukee, Wis.

Federal Rubber Co., (Cudahy), Milwaukee, Wis.

Goodrich Co., B. F., S. Main St., Akron, O.

Hamilton Rubber Mfg. Co., Mead & Prince Sts., Trenton, N. J.

Hewitt Rubber Co., 240 Kensington Ave., Buffalo, N. Y.

Home Tire Co., Trenton, N. J.

Lenox—See Boston Woven Hose & Rubber Co.

Manhattan Rubber Mfg. Co., Willett St., Passaic, N. J.

Mechanical Rubber Co., 307 W. Randolph St., Chicago, Ill.

Mechanical Rubber Co., C. & P. & Nickel Plate R. R., Cleveland, O.

Milford Rubber Works, Milford, Ill.

Monarch Linoleum & Rug Co., Bulletin Bldg., Philadelphia, Pa.

Monarch Rubber & Oil Cloth Co., Drexel Bldg., Philadelphia, Pa.

New York Belting & Packing Co., 91 Chambers St., New York, N. Y.

Pennsylvania Rubber Co., Jeannette, Pa.

Quaker City Rubber Co., 629 Market St., Philadelphia, Pa.

Thermoid Rubber Co., Trenton, N. J. (See page 543.)

Tiger—See Boston Woven Hose & Rubber Co.

United States Rubber Co., 1790 Broadway, New York, N. Y.

Victor Rubber Co., Springfield, O. (See page 971.)

Voorhees Rubber Mfg. Co., 20-56 Bostwick Ave., Jersey City, N. J.

MATS, Running Board

(Small mats for attaching to running boards for cleaning feet when entering car)

A. B. C.—See American Business Corp.

Allen—See Cushion Pedal Co.

American Business Corp., 1780 Broadway, New York, N. Y. "A. B. C." (See page 753.)

Auburn Leather Goods Co., 3 Miller St., Auburn, N. Y. "Automat."

Automat—See Auburn Leather Goods Co.

Bradsto Appliances, Inc., 65 Main St., Buffalo, N. Y. "Standard."

Brockton Heel Co.—See F. A. Sales Co.

Chamberlain Co., B. F., 184 Summer St., Boston, Mass.

Continental Motor Equipment Co., 18 Broadway, New York, N. Y.

Cushion Pedal Co., 400-32 N. Ave. 19, Los Angeles, Calif. "Allen." (See page 481.)

Darragh, Small & Co., 177 Water St., New York, N. Y.

E. G. Mfg. Co., 250 W. 54h St., New York, N. Y. (Dealers.) (See page 631.)

Economic Mfg. Co., 5020 Montview Blvd., Denver, Colo.

Ever-Ready—See Wisconsin Mat Co.

Ever-Right Products Corp., 351-53 Jay St., Brooklyn, N. Y.

F. A. Sales Co., 253 Fifth Ave., New York, N. Y. (Sole Distributors for Brockton Heel Co., Brockton, Mass.)

Fernald Mfg. Co., North East, Pa.

Franklin Rubber Co., 134 Federal St., Boston, Mass.

General Rubber Goods Co.—See Zinke Co.

Goliath—See Zinke Co.

Heywood Bros. & Wakefield Co., Water St., Wakefield, Mass. "Slide-On," "Holdfast." "Safe Tread."

Holdfast—See Heywood Bros. & Wakefield Co.

Keystone Wire Matting Co., 607-09 Seventh St., Beaver Falls, Pa.

Koko Mat Co.—See Mooers-Wright Co.

Marathon Tire & Rubber Co., Cuyahoga Falls, Ohio.

Marnot Leather Mat Co., 315 Union Park Ct., Chicago, Ill.

Mat Co, Muskegon, Mich. "Never-Slip." (See pages 627 and 628.)

Metal Auto Parts Co., Chase & Henry Sts., Indianapolis, Ind.

Mooers-Wright Co., 1400 Broadway, New York, N. Y. (Factory Sales Agents for Koko Mat Co., New York, N. Y.) (See page 1167.)

Mosler & Co., A. R., Mt. Vernon, N. Y.

Never-Slip—See Mat Co.

Rich Mfg. Co., 1777 Broadway, New York, N. Y. "Rico." (See page 1223.)

Rico—See Rich Mfg. Co.

Roos, Wm. A., 109 W. 225th St., New York, N. Y.

Rubber Specialty Co., 27 Cornhill St., Boston, Mass.

Rudco—See Ruddiman Co.

Ruddiman Co., F. G., Ionia, Mich. "Rudco."

Safe Tread—See Heywood Bros. & Wakefield Co.

Sanitary Wire Door Mat Co., 413 S. Lincoln St., Chicago, Ill.

Slide-On—See Heywood Bros. & Wakefield Co.

Staff, J. Wadsworth, 122 S. Michigan Ave., Chicago, Ill. (Dealers.) (See page 1177 and 1193.)

Standard—See Bradsto Appliances, Inc.

Standley Skid Chain Co., Boone, Iowa. (See page 679.)

Stanwood Equipment Co., 308 N. Michigan Blvd., Chicago, Ill. (See page 91.)

Sure-Step Auto Mat Co., 12-14 Canal St., Boston, Mass.

Tyler Mfg. Co., 755 Boylston St., Boston, Mass. "Tymco."

Tymco—See Tyler Mfg. Co.

United Mat Mfg. Co., 149 Caler Ave., Jersey City, N. J.

Wear Proof Mat Co., 500 S. Peoria St., Chicago, Ill.

Wisconsin Mat Co., 392-94 Sixth St., Milwaukee, Wis. "Ever-Ready."

"X" Laboratories, 25 W. 45th St., New York, N. Y. (See page 227.)

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for General Rubber Goods Co., Cleveland, O. "Goliath.")

MATS, STEP—See Mats, Running Board

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Drop-Forgings Hammered Forgings

Our success has been due principally to the personal attention given all orders, large or small.

Our Forgings are clean, free from scale and true to *size* specified. Stock *evenly* distributed, making a considerable saving in machining cost.

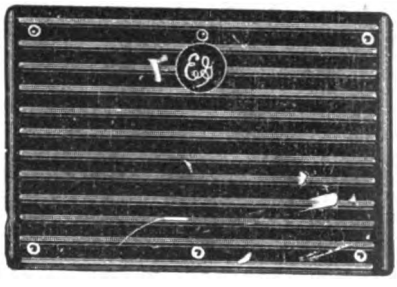
Our machine shop is fully equipped to handle machine work of all kinds—roughing and finishing.

HEAVY FORGINGS, HAMMERED FROM BILLETS OUR SPECIALTY

SEND US YOUR INQUIRIES

Milwaukee Forge and Machine Company
MILWAUKEE, WIS.

Running Board Mats

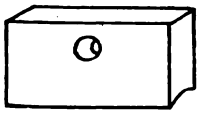


Made of the very best quality of non-blooming rubber stock. Wide corrugations—which prevents slipping of the heel; easily kept clean. Beautiful in design, durable and inexpensive.

List Price $1.50

E. G. Manufacturing Co. Inc.
250 W. 54th St., New York City

CARBALLOY AUTOMOBILE BRUSHES

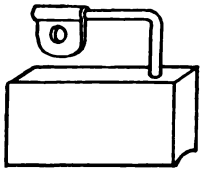


the

Brush of Quality

for

Starter or Generator



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Longstreth & VanDyke.....1613 Chestnut St., Philadelphia, Pa.
A. C. Austin.....6 Beacon St., Boston, Mass.
F. E. Beecher.....1835 Republic Bldg., Chicago, Ill.
Sindel & Shafranek.....754 Hippodrome Annex, Cleveland, O.
H. E. Prior.....1012 N. Illinois St., Indianapolis, Ind.
LeFile & Houston Co.....205 Hill Bldg., Jacksonville, Fla.
E. F. Ward.....605 Van Nuys Bldg., Los Angeles, Cal.

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MATTING, Aluminum

(Stamped aluminum matting for covering floor or running boards)

Aluminum Co. of America, Oliver Bldg., Pittsburgh, Pa.

American Automobile Accessories Co., 1120 Broadway, Denver, Colo. "Sewell."

Erdle Perforating Co., 171 York St., Rochester, N. Y. "Pyrma." (See page 633.)

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

Pyramid—See Spiro Mfg. Co.

Pyrma—See Erdle Perforating Co.

Richards & Co., 200-06 Causeway St., Boston, Mass. "Rico."

Rico—See Richards & Co.

Sewell—See American Automobile Accessories Co.

Spiro Mfg. Co., C., 68-72 E. 131st St., New York, N. Y. "Pyramid."

Stanwood Equipment Co., 308 N. Michigan Blvd., Chicago, Ill. (See page 91.)

MATTING, LINOLEUM—See Linoleum

MATTING, RUBBER—See Mats, Rubber

MEASURES, METAL—See Funnels and Measures, Metal

MEASURING MACHINES—See Machines, Leather Measuring

MECHANICAL BELLS—See Bells, Mechanical

MECHANICAL CLEANERS—See Cleaners, Glass Wind Shield

MECHANICAL ENGINE STARTERS — See Starters, Mechanical or Spring Engine

MECHANICAL HORNS—See Horns, Mechanical

MECHANICS' BLUE—See Blue, Mechanics'

MECHANICS' GOGGLES—See Goggles, Mechanics' and Welders'

MEDICAL EMERGENCY CASES — See Cases, Medical

MERCURY RECTIFIERS—See Rectifiers, Alternating Current

METAL BODIES—See Bodies, Metal

METAL CEMENT—See Cement, Cast Iron

METAL DASHES—See Dashes, Metal

METAL FLOATS—See Floats, Metal

METAL FUNNELS—See Funnels and Measures, Metal

METAL GASKETS—See Gaskets, Metallic

METAL GEARS—See Gears, Metal

METAL HOSE—See Tubing, Flexible Metallic

METAL LACQUERS—See Laquers, Metal

METAL LINED HOSE—See Hose, Metal Lined

METAL LOCKERS—See Lockers, Metal

METAL MEASURES—See Funnels and Measures, Metal

METAL MUD GUARDS—See Fenders or Mud Guards, Metal

METAL PINIONS—See Gears and Pinions, Metal

METAL PLANERS—See Planers, Metal

METAL POLISHES—See Polishes, Metal

METAL PRESSINGS—See Stampings

METAL RACKS—See Racks, Metal Tool, Stock and Tire

METAL RADIATOR COVERS OR SHIELDS—See Covers, Metal Radiator

METAL SEAT BACKS—See Backs, Metal Seat

METAL SHAPERS—See Shapers, Metal

METAL SHELVING—See Racks, Metal Tool, Stock and Tire

METAL STAMPINGS—See Stampings and Pressings, Metal

METAL TESTING INSTRUMENTS—See Instruments, Metal Testing

METAL TESTING MACHINES—See Machines, Metal Testing

METAL TOOL BOXES—See Boxes, Wood Tool

METAL TRIMMINGS — See Trimmings, Metal

METAL TRUCK CABS—See Cabs, Metal Truck

METALLIC GASKETS—See Gaskets, Metallic

METALLIC GASKETS FOR FORDS—See Gaskets, Cylinder Head

METALS, Bearing

Acorn—See Cadman Mfg. Co.

Adamant—See Magnolia Metal Co.

Aetna Brass & Bronze Co., 1631-35 E. 55th St., Cleveland, O.

Ajax Metal Co., Philadelphia, Pa.

Albani—See Cox Brass Mfg. Co.

Aluminum Manufacturers, Inc., 6205 Carnegie Ave., Cleveland, O.

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Made of special extra heavy aluminum that lasts longer than the car.
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The Best Bearing Metal on the Market

Fine Anti-Friction Qualities and Great Durability

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Will run cool with minimum wear in any connecting rod or crank shaft bearing.
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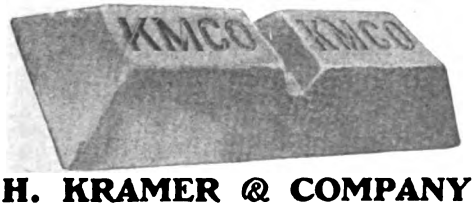

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SMELTERS and REFINERS

H. KRAMER & COMPANY

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METALS, Bearing (Continued)

American Brass Co., Waterbury, Conn. (See page 165.)

American Bronze Corp., Berwyn, Pa. "Non-Gran." (See page opposite Inside Front Cover.)

American Bronze Co., 90-108 Arthur St., Buffalo, N. Y. "Grainless."

American Manganese Bronze Co., (Holmesburg), Philadelphia, Pa. "Spare'a."

American Non-Ferrous Metals Corp., Chester, Pa. "Cop-Led."

Anderson Foundry Co., Wm. B., 24-30 S. Clinton St., Chicago, Ill. "WB."

Atlas Brass Foundry Co., Columbus, O. (See page 595.)

Auto-Crat—See Syracuse Smelting Works.

Azalea—See Vanadium Metals Co.

Bear Well—See Chicago Hardware Foundry Co.

Birkenstein & Sons, S., 1032 W. North Ave., Chicago, Ill. "Wizard." (See page 633.)

Blake, Edwin J., 565 Windsor St., Hartford, Conn.

Blatchford Co., R. W., 230 N. Clinton St., Chicago, Ill.

Bound Brook Oil-less Bearing Co., Bound Brook, N. J. (See page 611.)

Bridgeport—See Monumental Bronze Co.

Bronze Metal Co., Meadville, Pa. "Vim."

Bunting Brass & Bronze Co., 737 Spencer St., Toledo, O. (See page 295.)

Cadman Mfg. Co., A. W., 2314-16 Smallman St., Pittsburgh, Pa. "Acorn."

Caskey's Brass & Bronze Works, Richmond & York Sts., Philadelphia, Pa.

Chamet—See Chase Rolling Mill Co.

Chase Rolling Mill Co., Grand St., Waterbury, Conn. "Chamet."

Chicago Hardware Foundry Co., 2500 Great Lakes Ave., North Chicago, Ill. "Bear Well."

Clayton & Lambert Mfg. Co., Detroit, Mich. (See page 981.)

Cleveland Graphite-Bronze Co., Cleveland, O. "Dannite." (See page 179.)

Climax—See North American Smelting Co.

Clover Leaf—See Williams & Son.

Columbia Smelting & Refining Works, 365-67 West St., New York, N. Y.

Columbian Brass Foundry, Freeport, N. Y. "Excello."

Cop-Led—See American Non-Ferrous Metals Corp.

Copaloy—See Michigan Smelting & Refining Co.

Continuous Rolling Mills of the Continuous Casting Corp., Garwood, N. J.

Cox Brass Mfg. Co., Albany, N. Y. "Albani." (See page 261.)

Cramp & Sons Ship & Engine Building Co., William, Philadelphia, Pa. "Parsons." (See page 209.)

Dannite—See Cleveland Graphite-Bronze Co.

Dayton Bronze Bearing Co., 916-18 E. Third St., Dayton, O.

Defreville, J., 142 McWhorter St., Newark, N. J.

Delaware Brass & Aluminum Co., 20th & Walnut Sts., Muncie, Ind.

Dutch Boy—See National Lead Co.

Electric Smelting & Aluminum Co., 555 W. Jackson St., Lockport, N. Y.

Elephant—See Phosphor Bronze Smelting Co.

Emco—See Empire Metal Co.

Empire Metal Co., 820 E. Water St., Syracuse, N. Y. "Premier," "Triumph," "Emco."

Erie Bronze Co., 355 W. 19th St., Erie, Pa. (See page 261.)

Eureka Brass Co., 601 Red Bud Ave., St. Louis, Mo.

Eureka Co., North East, Pa.

Excello—See Columbian Brass Foundry.

Fahrig Metal Co., 24 Commerce St., New York, N. Y. (See page 633.)

Frictionless Metal Co., 1103-05 Chestnut St., Chattanooga, Tenn.

Gardiner Metal Co., 1368 W. Lake St., Chicago, Ill.

General Aluminum & Brass Mfg. Co., Detroit, Mich. (See page 203.)

General Bronze Foundry Co., 5810 Superior Ave., Cleveland, O. "Werne," "Tenax." (See page 651.)

Gilbert & Sons Brass Foundry Co., A., 4019 Forest Park Blvd., St. Louis, Mo. (See page 207.)

Graham & Co., James, 298 Wooster St., New Haven, Conn.

Grainless—See American Bronze Co.

Great Western Smelting & Refining Co., 41st & Wallace Sts., Chicago, Ill.

Harper, Thomas, 204 Lafayette St., New York, N. Y. "Hi-Servis"

Hayman & Co., Michael, 856 E. Ferry St., Buffalo, N. Y.

Hecla—See Paulson & Son.

Henning & Sons, V., 330 Belmont Ave., Brooklyn, N. Y.

Hi-Servis—See Harper, Thomas.

Hoffman Bronze & Aluminum Casting Co., 993 Addison Rd., Cleveland, O.

Howard Metal Co., Second & Canal Sts., Reading, Pa.

Hoyt Metal Co., St. Louis, Mo. "Trojan." (See page 1179.)

Hub—See Richards & Co.

Ideal Bronze Co., 1265-69 E. 55th St., Cleveland, O. "Vitaloy." (See page 205.)

Ideal—See Murphy Metals Co.

Ideal Metal Co., 1212 W. Liberty St., Cincinnati, O.

Illinois Smelting & Refining Co., 410 N. Peoria St., Chicago, Ill.

Jacobson & Sons Co., I. M., 920-28 Catherine St., Detroit, Mich. "Motex."

Johnson Bronze Co., New Castle, Pa. (See page 181.)

Kahn Bros., 785-97 Humboldt St., Brooklyn, N. Y. "Victory."

Kelly—See Super-Refined Metals Co.

Kelly Brass Works, 226 W. Ontario St., Chicago, Ill.

Kmco—See Kramer & Co.

Kramer & Co., H., 21st Pl. and Loomis St., Chicago, Ill. "Kmco." (See page 633.)

Lehman Bros., Fourth & Jefferson Sts., Hoboken, N. J.

Light Mfg. & Foundry Co., Water St., Pottstown, Pa.

Lissberger & Son, Marks, 251 Borden Ave., Long Island City, N. Y.

Lumen Bearing Co., Buffalo, N. Y. (See page 1248.)

Lynux—See Aluminum Castings Co.

McGill Metal Co., Valparaiso, Ind.

McKenna Brass & Mfg. Co., First Ave. & Ross St., Pittsburgh, Pa.

Magnolia Metal Co., 113-15 Bank St., New York, N. Y. "Adamant."

Maluminum Castings Co., 1116-30 E. Georgia St., Indianapolis, Ind.

Martin & Anson, 2226-28 Indiana Ave., Chicago, Ill.

Master—See Murphy Metals Co.

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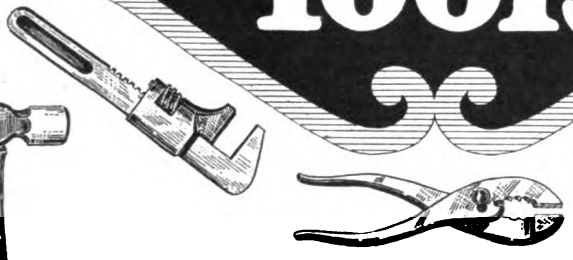

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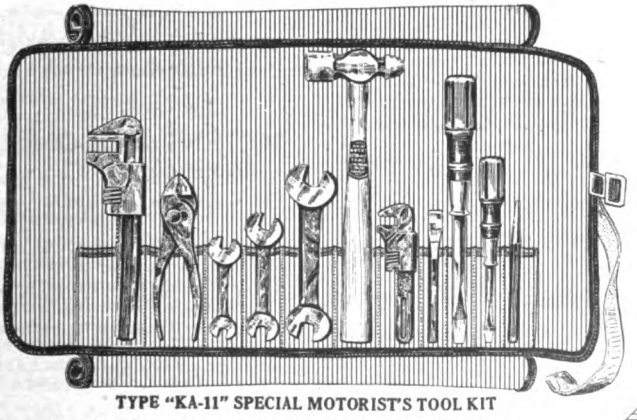

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METALS, Bearing (Continued)

Merchant & Evans Co., 2035 Washington Ave., Philadelphia, Pa. "Silver Genuine."

Michigan Smelting & Refining Co., 7885 Jos. Campau Ave., Detroit, Mich. "Copaloy."

Mogul Metal Co., Detroit, Mich. (See page 111.)

Monumental Bronze Co., 354 Howard St., Bridgeport, Conn. "Bridgeport."

More-Jones Brass & Metal Co., 3132-44 N. Broadway, St. Louis, Mo.

Motex—See Jacobson & Sons Co.

Murphy Metals Co., 2837 S. Halsted St., Chicago, Ill. "Ideal," "Old Reliable," "Master."

Mussy-Lyon Co., Detroit, Mich. (See page 111.)

Nabralco—See National Bronze & Aluminum Foundry Co.

National Bronze & Aluminum Foundry Co., 2539 E. 79th St., Cleveland, O. "Nabralco."

National Lead Co., 111 Broadway, New York, N. Y. "Dutch Boy." (See page 491.)

Non-Gran—See American Bronze Corp.

North American Smelting Co., 900 W. Thompson St., Philadelphia, Pa. "Vulcan," "Philadelphia," "Climax."

Oberdorfer Brass Co., M. L., 804 E. Wate St., Syracuse, N. Y.

Old Reliable—See Murphy Metals Co.

Owosso Bronze Bearing Co., Owosso, Mich.

Parsons—See Cramp & Sons.

Paulson & Son, Thomas, 97 Second Ave., Brooklyn, N. Y. "Heela." (See page 207.)

Philadelphia—See North American Smelting Co.

Phosphor Bronze Smelting Co., 2200 Washington Ave., Philadelphia, Pa. "Elephant."

Pittsburgh White Metal Co., 3116 Penn Ave., Pittsburgh, Pa. "Rinehart."

Premier—See Empire Metal Co.

Reeves & Co., Paul S., 1415-25 Catharine St., Philadelphia, Pa.

Revolution—See Sanford Co.

Rhoades & Co., R. W., 15-17 West Ave., Long Island City, N. Y.

Richards & Co., 200-06 Causeway St., Boston, Mass. "Rico," "Hub."

Rico—See Richards & Co.

Rinehart—See Pittsburgh White Metal Co.

Rowell Mfg. Co., Union & Hancock Sts., Appleton, Wis.

Sanford Co., David C., 33-39 Drouve St., Bridgeport, Conn. "Revolution."

Seaboard Metal Corp., 231 Randolph Ave., Jersey City, N. J.

Semper Idem—See Wildes Son.

Sherwood Brass Works, 6331 E. Jefferson Ave., Detroit, Mich.

Shonberg, I., 122 Flushing Ave., Brooklyn, N. Y. "Bear."

Silver Genuine—See Merchant & Evans Co.

Smith Hardware Co., Frank F., 35 Clay St., Newark, N. J.

Spare's—See American Manganese Bronze Co.

Standard Separator Co., 45th St. & Burnham Rd., Milwaukee, Wis.

Stanley—See Syracuse Smelting Works.

Super-Refined Metals Co., 2631 Woodward Ave., Detroit, Mich. "Kelly." (See page 637.)

Superior Bronze Corp., 19th & Poplar Sts., Erie, Pa.

Syracuse Smelting Works, 192 Diamond St., Brooklyn, N. Y. "Auto-Crat." "Stanley."

T. B. C.—See Titanium Bronze Co.

Tenax—See General Bronze Foundry Co.

Thiery & Kendrick Mfg. Co., Detroit, Mich. (See page 419.)

Titan Metal Co., Allegheny St., Bellefonte, Pa.

Titanium Bronze Co., Sugar & Lafayette Sts., Niagara Falls, N. Y. "T. B. C."

Triumph—See Empire Metal Co.

Trojan—See Hoyt Metal Co.

U. S. Reduction Co., East Chicago, Ind.

U S A—See United Smelting & Aluminum Co.

United American Metals Corp., 192 Diamond St., Brooklyn, N. Y.

United Smelting & Aluminum Co., 183-89 Commerce St., New Haven, Conn. "U S A."

Vanadium—See Enterprise Metal Co.

Vanadium Metals Co., Vanadium Bldg., Pittsburgh, Pa. "Amalea."

Victory—See Kahn Bros.

Vim—See Bronze Metal Co.

Vitaloy—See Ideal Bronze Co.

Vulcan—See North American Smelting Co.

W B.—See Anderson Foundry Co.

Wellman Bronze Co., 6017 Superior Ave., Cleveland, O.

Wensley Metal Products Co., 13th & Blake Sts., Denver, Colo.

Werne—See General Bronze Foundry Co.

Whitehouse Mfg. Co., 42 Elm St., Newark, N. J. (See page 631.)

Wildes Son, Thomas, 14 Dover St., New York, N. Y. "Semper Idem."

Williams, Franklin, 263 Jefferson St., Newark, N. J. (See page 163.)

Williams & Son, E. A., 105-11 Plymouth St., Jersey City, N. J. "Clover Leaf."

Wizard—See Birkenstein & Sons.

Zenite Metal Co., 201-05 N. West St., Indianapolis, Ind. (See page 637.)

METALS, DEALERS IN—See Steel, Dealers In

METERS, AIRPLANE ALTITUDE—See Altimeters; Also Barographs

METERS, AMPERE—See Ammeters and Voltmeters; also Gages, Battery

METERS, COMPRESSION—See Gages, Cylinder Compression

METERS or ODOMETERS, Distance Recording

(For combined Odometers and Speedometers—See Speedometers)

American Taximeter Co., 16 W. 61st St., New York, N. Y. "Dreadnaught."

Coronet—See Baumgaertner, F.

Dreadnaught—See American Taximeter Co.

Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 177.)

Veeder Mfg. Co., 22 Sargeant St., Hartford, Conn. (See page 637.)

METERS OR ODOMETERS, Distance Recording, for Fords

(See also Speedometers and Odometers)

J-M—See Johns-Manville Co.

Johns-Manville Co., H. W., Madison Ave. & 41st St., New York, N. Y. "J-M."

Veeder Mfg. Co., 22 Sargeant St., Hartford, Conn. (See page 637.)

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WHITEHOUSE HIGH-SPEED BRONZE BARS

Parts for Ford Cars—Shackle Bolts fitted with Oil Cups and Grease Cups. A full line of Oil Cups and Grease Cups.

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Records truck mileage with the necessary accuracy to show *exact costs* for every mile traveled—and for every item, such as fuel, oil, tires, battery-maintenance and repairs. Registers up to 100,000 miles in tenths of a mile, then repeats. Seals onto front hub; cannot be made to register falsely. In ordering, mention the make, model, year of manufacture of truck and size of front wheel.

Always registers miles forward, whether truck runs forward or backward. Regular model, price $20. Special model for FORD trucks, $15. Write for brief literature.

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Philadelphia Distributors
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Bowser & Co., S. F., Fort Wayne, Ind.
Buffalo Meter Co., 2393 Main St., Buffalo, N. Y. "Niagara."
Niagara—See Buffalo Meter Co.
Tokheim Oil Tank & Pump Co., Wabash Ave. & Wabash R.R., Fort Wayne, Ind.

METERS, GASOLINE CONSUMPTION—See Gages, Vacuum Tank

METERS, Grade

(For attaching to car to indicate degree of grades)

Adams Co., 295 Sixth St., Dubuque, Ia. "Gradometer."
Genco—See General Scientific Equipment Co.
General Scientific Equipment Co. (North Philadelphia), Philadelphia, Pa. "Genco."
Gradometer—See Adams Co.
Hillmeter—See Meteor Sales Corp.
Meteor Sales Corp., 140 W. 68th St., New York, N. Y. "Hillmeter."
Weinhagen & Hespe, 159-65 Leonard St., New York, N. Y.

METERS, HEAT INDICATING — See Meters, Water Temperature Indicating

METERS, Magnet

(For investigating or testing the magnetic qualities of permanent magnets)

Holz, Herman A., 17 Madison Ave., New York, N. Y.

METERS, Magneto, for Fords

Burton-Rogers Co., 755 Boylston St., Boston, Mass. (Sales Department for Hoyt Electrical Instrument Works, Penacook, N. H.) (See page 467.)
Eeco—See Electric Equipment Co.
Electric Equipment Co., 1240 S. Hope St., Los Angeles, Cal. "Eeco."
Hoyt Electrical Instrument Works—See Burton-Rogers Co.
Valley Electric Co., 3157 S. Kingshighway, St. Louis, Mo. (See page 385.)

METERS, OIL—See Meters, Gasoline

METERS, Oil Temperature Indicating

(For indicating the temperature of the lubricating oil)

Climax Motor Devices, Chagrin Falls, O. (See pages 303 and 565.)
Moto-Meter Co., Long Island City, N. Y. (See page 639.)

METERS, SPEED—See Speedometers

METERS, TAXI—See Taximeters

METERS, Truck Load Indicating

Auto Loadmeter, Rockville Centre, N. Y.
Black & Decker Mfg. Co., Towson Heights, Baltimore, Md. "Loadometer."
Cammen Laboratories Co., 42 W. 39th St., New York, N. Y. "Carsafe."
Carsafe—See Camman Laboratories Co.
Loadometer—See Black & Decker Mfg. Co.
Tractometer Co., Slauson & Santa Fe Aves. Los Angeles, Cal.

METERS, VACUUM TANK—See Gages, Vacuum Tank

METERS, VOLT—See Ammeters and Voltmeters; also Gages, Battery

METERS, Water Temperature Indicating

(For attachment to radiator or dash to show temperature of cooling water)

A. E. M.—See Moeller, A. E.
Autostat—See Moeller, A. E.
Boyce Moto-Meter—See Moto-Meter Co.
Foxboro Co., Neponset Ave., Foxboro, Mass.
Genco—See General Scientific Equipment Co.
General Scientific Equipment Co. (North Philadelphia), Philadelphia, Pa. "Genco."
Metalware Corp., 228 W. Superior St., Chicago, Ill. (See page 1161.)
Moeller, A. E., 261 Sumpter St., Brooklyn, N. Y. "A. E. M." "Autostat." (See page 527.)
Moto-Meter Co., Long Island City, N. Y. "Boyce Motometer." (See page 639.)
Motor Eye—See Metalware Corp.
National Gauge & Equipment Co., La Crosse, Wis. "Radi-Meter." (See page 437.)
Radi-Meter—See National Gauge & Equipment Co.
Stewart-Warner Speedometer Corp., Chicago, Ill. "Warn-O-Meter." (See page 177.)
Warn-O-Meter—See Stewart-Warner Speedometer Corp.

METERS, Water Temperature Indicating, for Fords

(For attachment to radiator to show temperature of cooling water)

Boyce Moto-Meter—See Moto-Meter Co.
Moto-Meter Co., Long Island City, N. Y. "Boyce Motometer." (See page 639.)

MICA SHEETS, TUBES, WASHERS and CORES

American Mica Co., Newton Lower Falls, Mass.
Asheville Mica Co., Biltmore, N. C.
Chicago Mica Co., Lincoln & Campbell Sts., Valparaiso, Ind. "Mica-Bond."
Ford Mica Co., 14 Christopher St., New York, N. Y.
Granite State Mica Co., 63 Gorham St., West Somerville, Mass.
Mica Mfg. Co., 135 Johnson St., Brooklyn, N. Y.
Micabond—See Chicago Mica Co.
Munsell & Co., Eugene, 63 Church St., New York, N. Y.
Ray-O Mfg. Co., 246-52 Fulton St., Brooklyn, N. Y. (See page 717.)
Richmond Mica Co., 801 E. Main St., Richmond, Va. "Silver Sheen."
Schoonmaker Co., A. O., 83 Park Pl., New York, N. Y.
Tar Heel Mica Co., Plumtree, N. C.
Watson Bros., 170 Purchase St., Boston, Mass

MICA, TIRE—See Talc, Tire

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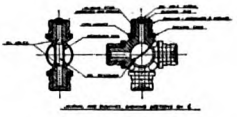

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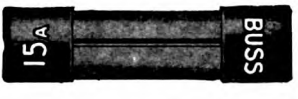

BOYCE MOTO METER

Standard Model..$10.00

Get These Sales Promoters

EVERY dealer who orders from his jobber 10 or more assorted Boyce Moto-Meters, for delivery at one time, receives these proved sales winners without cost:

A handsome metal sign in colors, announcing free installation of Boyce Moto-Meters—the famous Moto-Meter display stand—and an attractive free-dial-offer display board. Ask your jobber.

The Moto-Meter Company, Inc.

Long Island City NEW YORK

List of Other Models and Prices

De Luxe Model	$15.00
Universal Model	7.50
Junior Model	5.00
Midget Model	2.50
Spc. Ford Model	3.50

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MICROMETER CALIPERS

Almond Mfg. Co., T. R., 1 Maple Ave., Ashburnham, Mass.
Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
Coats Machine Tool Co., 30 Church St., New York, N. Y. "Prestometer."
Columbia—See Smith, E. G.
Goodell-Pratt Co., Greenfield, Mass.
Prestometer—See Coats Machine Tool Co.
Reed Small Tool Works, 143 June St., Worcester, Mass.
Slocomb Co., J. T., 35 Oxford St., Providence, R. I.
Smith, E. G., 315 W. Park Ave., Tampa, Fla "Columbia."
Starrett Co., L. S., Athol, Mass.

MILEAGE INDICATORS—See Meters, Distance

MILLING ATTACHMENTS—See Attachments, Lathe Milling

MILLING COMPOUNDS—See Lubricants, Cutting

MILLING CUTTERS—See Cutters, Milling

MILLING MACHINES—See Machines, Milling

MILLS, BORING—See Machines, Boring

MILLS, DRY SHAFT BEARING END FOR FORDS

Wilson, K. R., 10-16 Lock St., Buffalo, N. Y. (See page 611.)

MILLS, STEERING KNUCKLE BUSHING FOR FORDS

Wilson, K. R., 10-16 Lock St., Buffalo, N. Y. (See page 611.)

MINIATURE INCANDESCENT LAMPS—See Lamps, Miniature Incandescent

MIRROR REFLECTORS—See Reflectors, Mirror Lamp

MIRRORS, Adjustable Windshield, Dashboard and Fender

(To enable driver to see to the rear of the car)

Accessory Supply Co., 12th & Tracy Sts., Kansas City, Mo. "Asco."
Asco—See Accessory Supply Co.
Alexander Mfg. Co., J., 1991 Broadway, New York, N. Y. "Mirrorscope."
American Auto Lamp Co., Union Hill, N. J. (See page 549.)
Amesbury Bent Glass Co., Amesbury, Mass.
Arkay—See Riley-Klotz Mfg. Co.
Auto Mirror & Mfg. Co.—See Oettinger Corp.
Automotive Accessories, 523 N. Buckeye St., Kokomo, Ind.
Automotive Supply Mfg. Co., 2005½ Main St., Dallas, Tex. "Recto."
Autoscope—See Oettinger Corp.
Autoscope—See Whitehouse Mfg. Co.
Beedee Distributing Service, 613 W. Pico St., Los Angeles, Cal. (Sole Distributors for De Luxe Auto Mfg. Co.) (See page 1137.)
Berger & Co., 208 W. 11th St., Los Angeles, Cal. "Cop-Spotter." (See page 641.)
Britton Sales Co., 161 Columbus Ave., New York, N. Y.
C-Bak—See International Sales Corp.
Chesler & Son, J., 254 Wallabout St., Brooklyn, N. Y.
Clearview—See D'Eyraud, Louis.
Cop-Spotter—See Berger & Co.
Crescent Mfg. Co., 129 Reade St., New York, N. Y. (See page 1207.)
D'Eyraud, Louis, 452 W. 16th St., Los Angeles, Cal. "Clearview." (See page 247.)
De Luxe Auto Mfg. Co.—See Beedee Distributing Service.
Elbe Motor Products Co., 414 W. Pico St., Los Angeles, Cal. "Speedascope."
Essandee Corp., 330 W. 16th St., Los Angeles, Cal. "Rearsite." (See page 645.)
G. W.—See Gartley-Weston Mfg. Co.
Gartley-Weston Mfg. Co., Real Estate Exchange Bldg., Detroit, Mich. "G. W."
Hindview—See Kales Stamping Co.
Hoco—See Hoeft & Co.
Hoeft & Co., 400 N. Ashland Ave., Chicago, Ill. "Hoco."
International Sales Corp., 311 Fairfield Ave., Bridgeport, Conn. "C-Bak." (See page 641.)
Kales Stamping Co., 1663 W. Lafayette Blvd., Detroit, Mich. "Hindview." (See page 641.)
Kaufman & Sons, Chas., 1623 E. First St., Santa Ana, Cal.
Kilborn-Sauer Co., Post Road, Fairfield, Conn.
Krimsky, Emil J., 1440 S. Michigan Ave., Chicago, Ill.
Lawson Auto Specialty Co., 47 Bergen St., Brooklyn, N. Y. "Reflectoscope."
Liberty Works, Egg Harbor City, N. J. (See page 549.)
Manhattan Mirror Works, 46-50 Wooster St., New York, N. Y. (See page 701.)
Mirror Park-Lite Corp., 208 W. 17th St., New York, N. Y. "Ny-El-Co." (See page 593.)
Mirrorscope—See Alexander Mfg. Co.
Moswell Mfg. Co., 175 Grand St., New York, N. Y.
Neverout—See Rose Mfg. Co.
Ny-El-Co.—See Mirror Park-Lite Corp.
Oettinger Corp., F. W., 25 Vanderbilt Ave., New York, N. Y. (Sole Distributors for Auto Mirror & Mfg. Co., New York, N. Y.) "Autoscope," "Reer Flex." (See page 435.)
Rearsite—See Essandee Corp.
Rearometer Co., 25 W. 45th St., New York, N. Y.
Reer Flex—See Oettinger Corp.
Reflecto—See Unbreakable Mirror Co.
Reflectoscope—See Lawson Auto Specialty Co.
Retco—See Automotive Supply Mfg. Co.
Riley-Klotz Mfg. Co., 17 Mulberry St., Newark, N. J. "Arkay."
Rosco—See Rosen & Co.
Rose Mfg. Co., 910 Arch St., Philadelphia, Pa. "Never-out." (See page 711.)
Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco."
Sees-All Mfg. Co., 1810 W. Lake Ave., Seattle, Wash.
Speedascope—See Elbe Motor Co.
Starr Bros. Bell Co., East Hampton, Conn.
Trico Products Corp., 624-28 Ellicott St., Buffalo, N. Y.
Unbreakable Mirror Co., Hackettstown, N. J. "Reflecto."
Vulcan Ignition Co., 25 Church St., New York, N. Y.
W. B.—See Wildenberg Bros.
Whitehouse Mfg. Co., 42 Elm St., Newark, N. J. "Autoscope." (See page 637.)
Wildenberg Bros., 356 W. 50th St., New York, N. Y. "W. B."

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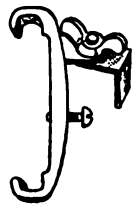
A GOOD MIRROR REFLECTS IN SALES

C-BAK INSIDE DRIVE MIRRORS



Simple to Attach

The practicability of C-BAK Mirrors lie in the bracket, which permits the adjustment to any desired angle of driving vision.

These brackets are strong and well made and are unaffected by continual use—and are constructed—NOT TO SHAKE LOOSE.

Guaranteed to Fit Any Car Made

SEND FOR PRICE LIST
We Want Distribution in Your Territory

INTERNATIONAL SALES CORPORATION
311 Fairfield Ave., Bridgeport, Conn.

KALES *Hindview*

AUTO MIRRORS
"TRADE MARK"

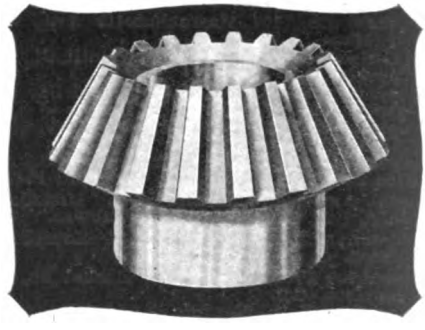
Dealers and jobbers are finding the Kales "Hindview" a profitable line. There is a steady demand for an accessory which contributes so materially to the safety of the car and its occupants; the features and construction of the Kales "Hindview"—either round or oblong—are unequalled. A style for every car and truck.

KALES STAMPING CO.

1663 W. Lafayette Blvd.
Detroit, Mich.

Canadian Plant
Walkerville, Ont.

Makers of pressed metal parts, washers, clips, etc.



"The Standard for Quality"

Johansson Gauges plus skillful workmanship guarantee the accuracy of

CROFOOT GEARS

to specification. What better guarantee could you ask?

Spurs Spirals Bevels
Helicals Mitres Worms
Worm Gears

Made in small and medium sizes (1 in. to 12 in. diameter), in medium and large quantities.

Crofoot Gear Works, Inc.
Hyde Park Ave. at Readville, Boston 37, Massachusetts

"COP-SPOTTER"
REAR VIEW MIRROR

Reflects full view of entire width of the road, as seen through the rear curtain window, without detracting from your line of vision. You see ahead, to the side and behind by simply shifting your eyes. Made of the finest plate glass with ground edges, securely mounted in a handsome nickel-plated frame, easily attached to any style open or closed car.

Retails for $4.00

Jobbers and Dealers—We have an attractive proposition for you

BERGER & COMPANY
208 W. 11th Street Los Angeles, Calif.
Makers of "BERLINE" Auto-Tow-Line

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MIRRORS, COWL LIGHT REFLECTING

(Small mirror to mount near instruments to reflect light from dash or cowl light on them)

Cole Visible Gas Gauge Co., 1364 S. Figueroa St., Los Angeles, Cal.

MIRRORS, Water Gage

(To make possible the reading of water gages on steam cars from the seat)

Knox Co., Frank J., Hartford, Conn.

MITTENS, AVIATORS—See Gloves and Mittens, Aviators

MIXERS, ECONOMIZERS or AGITATORS and AUXILIARY AIR VALVES

Aerodyn—See Standard Auto Mfg. Co.

Aerofram Co., 107 Massachusetts Ave., Boston, Mass.

Air-O-Gas Mixer Co., 526 W. Ninth St., Los Angeles, Cal.

Albrecht-Ingraham Co., 303 S. Third St., Minneapolis, Minn.

Alliance Co., 45 W. 34th St., New York, N. Y. "Hugill."

American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "Litl-Fiend."

Anglo American Aerator Co., Monadnock Bldg., San Francisco, Cal. "Howes."

Automotive Mfg. Co., 114-16 E. Fourth St., Dayton, O. "York."

Automotive Products Co., 112 Market St., San Francisco, Cal.

Bailey Co., W. J., Newark, N. J. "C. B."

Barnes, W. Porter, 103 Roberts Ave., Santa Rosa, Cal. "Powerene."

Bee & Gee Co., 1414 Broadway, New York, N. Y.

Boucher, Geo. S., Damascus, Va.

Brown-Taylor-Greene Co., 1323-25 S. Michigan Ave., Chicago, Ill. "Empire."

C. B.—See Bailey Co.

Carburetor Mantle Co., 1475 Broadway, New York, N. Y.

Clemmer, G. H., West Alexandria, O.

Cook, Geo. E., 2323 Broadway, New York, N. Y.

Coolidge, Lee, 325 Glisan St., Portland, Ore.

Cumming Forster Corp., 220 S. State St., Chicago, Ill. "West."

D. & P. Auto Repair Co., 1926 Broadway, New York, N. Y.

Daddy Vaporizer Co., 1317 Maumee Ave., Fort Wayne, Ind.

Dempsey Cycle Co., Perry Bldg., Philadelphia, Pa.

Deppe Motors Corp., 151 Church St., New York, N. Y. "Stanley."

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. "Jumbo."

Elder Mfg. Co., 2305 N. Illinois St., Indianapolis, Ind. "Radio."

Ever-Right Products Corp., 351-53 Jay St., Brooklyn, N. Y.

Flintham & Gilstrap Co., 906 E. Fourth St., Topeka, Kans. "Votalizer."

Gasco—See Gasket Supply Co.

Gasket Supply Co., 1728 Ludlow St., Philadelphia, Pa., "Gasco." (See page 447.)

Gasolater—See Martin-Lumghi Mfg. Co.

Gassave—See Leathers Bros. Co.

Green Bros. Mfg. Co., 126 Mass. Ave., Boston, Mass.

Hard Mfg. Co., Tonawanda St., Buffalo, N. Y. "Superfector."

Hine-Watt Mfg. Co., 180 N. Market St., Chicago, Ill. "Sly."

Hoosier Sub-Carbureter Co., 300 N. Illinois St., Indianapolis, Ind.

Howes—See Anglo American Aerator Co.

Hugill—See Alliance Co.

Ioco—See Interstate Electric Co.

Jumbo—See Edelmann & Co.

Kelley, J. M., 30 N. Water St., Rochester, N.Y.

Kero-Mix—See Patterson, F. W.

Kraus & Krauss, 114 E. State St., Marshall, Mich.

Leathers Bros. Co., Howard, Pa. "Gassave."

Lipman Pump Works, 100 Shirland Ave., Beloit, Wis.

Litl-Fiend—See American Automobile Accessories Co.

Lydon Mfg. Co., 108 N. Wabash Ave., Chicago, Ill. "Speedler."

M & M Sales Co., Lewiston, Pa.

Martin Shock Absorber Corp., 1301-1401 E. Slauson Ave., Los Angeles, Cal.

Mix-O-Lock—See National Motor Supply Co.

Motor Parts Co., Ambridge, Pa.

Napco—See National Auto Products Co.

National Auto Products Co., 1780-82 Broadway, New York, N. Y. "Napco."

Patterson, F. W., 336 E. 43d St., Chicago, Ill. "Kero-mix."

Peck, B. C., 432 Third St., San Bernardino, Cal.

Perrin Mfg. Co., 965 Woodward Ave., Detroit, Mich.

Powerene—See Barnes, W. Porter.

Progressive Mfg. Co., 468 64th Ave., West Allis, Wis.

Radio—See Elder Mfg. Co.

Sly—See Hine-Watt Mfg. Co.

Speedler—See Lydon Mfg. Co.

Standard Auto Mfg. Co., 814 E. Genesee St., Syracuse, N. Y. "Aerodyn."

Stanley—See Deppe Motors Corp.

Stewart Machine Works, Alfred C., 310 E. Tenth St., Los Angeles, Cal.

Superfector—See Hard Mfg. Co.

V Air Valve & Mfg. Co., 1648 Tremont St., Denver, Colo.

Victor Steel Stamping Co., 3102 Downing St., Denver, Colo.

Votalizer—See Flintham & Gilstrap Co.

West—See Cumming-Forster Corp.

Wilson Vaporizer Co., Roslyn, Pa.

Wizard Mfg. Co., 551 E. Main St., Rochester, N. Y.

York—See Automotive Mfg. Co.

MIXERS, ECONOMIZERS or AGITATORS and AUXILIARY AIR VALVES, for Fords

(See also Heaters, Mixture; also Primers, engine)

Albrecht-Ingraham Co., 303 S. Third St., Minneapolis, Minn.

American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "Footair."

American Automatic Devices Co., 515 W. Monroe St., Chicago, Ill. "Midget." (See page 643.)

Apex Electric Mfg. Co., 1410 W. 59th St., Chicago, Ill.

Automat-Co.—See Automotive Material Co.

Automotive Material Co., Chicago, Ill. "Automat-Co." (See page 1117.)

Automotive Products Co., 112 Market St., San Francisco, Cal.

Boucher, Geo. S., Damascus, Va.

Bull Dog—See Toledo Cable Co.

Clemmer, G. H., West Alexandria, O.

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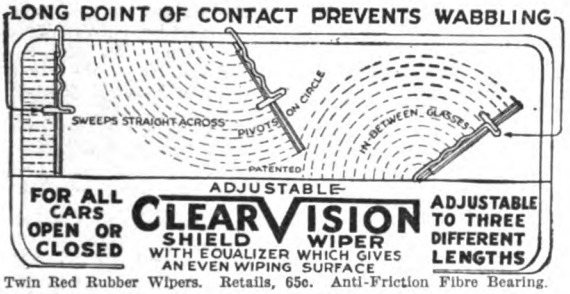
ADCo TRADE MARK

AMERICAN AUTOMATIC DEVICES CO.

AUTOMOTIVE NECESSITIES OF MERIT

Ford Oil Cock Wrench



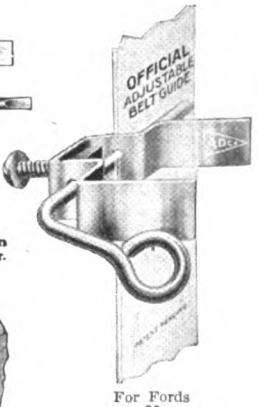
Twin Red Rubber Wipers. Retails, 65c. Anti-Friction Fibre Bearing.

Gasoline gauge for Fords. Guaranteed for 5 years.

Retails $1.50

8 Enameled Discs to a set, $20.00

Handle contains the blades. The ½", 5/16" and 7/32" blades of chrome nickel steel warranted not to break or bend. Smaller blades made of C. R. hardened.



For Fords 20c

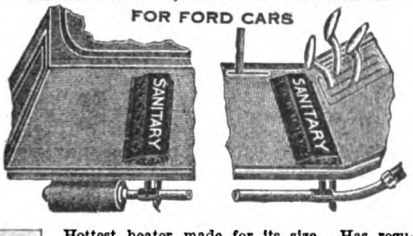
JEANNE INTENSIFIER

Anti-coil draining, giving long life to platinum points.

THE SANITARY HEATER

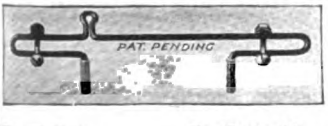
has a removable cover which makes it easy to keep clean and also makes it easy to install or remove from car.

FOR FORD CARS

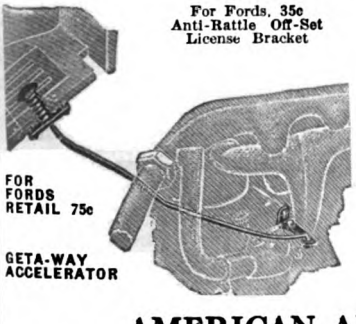


Hottest heater made for its size. Has regulating valve. Retails, $4.50

CATALOGS GLADLY FURNISHED UPON REQUEST

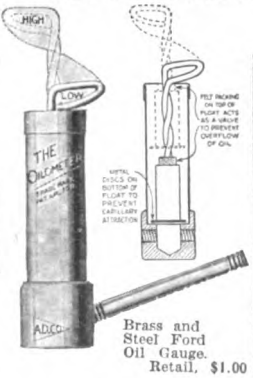


For Fords, 35c
Anti-Rattle Off-Set License Bracket

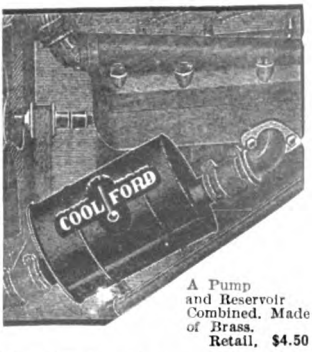


FOR FORDS RETAIL 75c

GETA-WAY ACCELERATOR



Brass and Steel Ford Oil Gauge. Retail, $1.00



A Pump and Reservoir Combined. Made of Brass. Retail, $4.50

AMERICAN AUTOMATIC DEVICES CO.

515 W. MONROE STREET CHICAGO, ILLINOIS

ADCo TRADE MARK

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MIXERS, ECONOMIZERS or AGITATORS, and AUXILIARY AIR VALVES for Fords (Continued)

Daddy Vaporizer Co., 1317 Maumee Ave., Ft. Wayne, Ind.
Ecometer Mfg. Co., Canfield St., Orange, N. J.
Edelmann & Co., E., 2633 N. Crawford Ave., Chicago, Ill. "Jumbo."
Ever-Right Products Corp., 351-53 Jay St., Brooklyn, N. Y.
Flintham & Gilstrap Co., 906 E. Fourth St., Topeka, Kans. "Votalizer."
Footair—See American Automobile Accessories Co.
Green Bros. Mfg. Co., 126 Mass. Ave., Boston, Mass.
Hawkins Mfg. Co., Vineland, N. J.
Ha Maa—See Hudson Motor Specialties Co.
Hoosier Sub-Carburetor Co., 309 N. Illinois St., Indianapolis, Ind.
Hub Auto Specialties Co., 100 Arlington Ave., Charlestown, Mass.
Hudson Motor Specialties Co., 1934 Arch St., Philadelphia, Pa. "Ha Maa."
Jumbo—See Edelmann & Co.
Midget—See American Automatic Devices Co.
Nu-Wae—See Relax Co.
Ogden Multiplier Co., Press Annex Bldg., Binghamton, N. Y.
Pledger Accelerator Co., 70 State St., Boston, Mass.
Relax Co., 2118 Monroe Ave., Norwood, O. "Nu Wae."
Remington Mfg. Co., 1513 Walnut St., Philadelphia, Pa.
Roper & Co., C. F., Hopedale, Mass.
SavOgas—See Vaporizer Utilities Sales Corp.
Stewart Machine Works, Alfred C., 310 E. Tenth St., Los Angeles, Cal.
Stransky Mfg. Co., Pukwana, S. Dak.
Toledo Cable Co., 1035 Grand Ave., Toledo, O. "Bull Dog."
Universal Products Co., 908 W. Chicago Ave., Chicago, Ill.
Victor Steel Stamping Co., 3102 Downing St., Denver, Colo.
Votalizer—See Flintham & Gilstrap Co.

MIXING VALVES—See Vaporizers

MIXTURE HEATERS—See Heaters, Mixture

MOHAIR CLOTH—See Cloth, Mohair

MOHAIR TOP DRESSING—See Dressing, Mohair Top

MOISTENERS, Air or Mixture

(For feeding water into the intake manifold)

Aderholdt Mfg. Co., 1528 Broadway, Denver, Colo.
American Automotive Corp., 1002 S. Michigan Ave., Chicago, Ill.
Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for Workrite Moisteners.) (See page 275.)
Atlas Auto Specialties Corp., 51 W. 66th St., New York, N. Y. "Ged."
Auto Specialty Sales Co., Foster Bldg., Denver, Colo. "Lumidor."
Auto Water Pep Co., 2204 S. Michigan Ave., Chicago, Ill.
Camel—See Weeks Mfg. Co.
Campbell, V. R., 126 Pennsylvania Ave., Elmira, N. Y. "Victor."
Casey Asco Mfg. Co., 1504 Grand Ave., Kansas City, Mo. "Dublservis."
Comfort Motor Machine Co., 715 Galapage St., Denver, Colo.
Douglas Auto Appliance Co., 2845 Chicago Ave., Minneapolis, Minn. (See page 483.)
Dublservis—See Casey Asco Mfg. Co.
Esta Co., 107 Massachusetts Ave., Boston, Mass.
Gas-E-Co.—See Gasoline Economy Co.
Gasoline Economy Co., Colonial Trust Bldg., Philadelphia, Pa. "Gas-E-Co."
Ged—See Atlas Auto Specialties Corp.
Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 174 and 175.)
Grelco—See Grothe Electric Co.
Grothe Electric Co., 322 Jefferson St., Burlington, Ia. "Grelco."
Halburn Co., 317 W. Pico St., Los Angeles, Cal. "Jensen."
Hollowell Bros., 329 W. Pico St., Los Angeles, Cal.
Humistat—See Tremont Products Co.
Hydro-Carbon Preventive Co., 3029 Third Ave., New York, N. Y.
Hydro-Juster—Motor Craft Shops.
Hydrovaporizer—See Accessory Mfg. Sales Co.
J-M Oxygenerator Co., 1929 E. 40th St., Cleveland, O.
Jensen—See Halburn Co.
Lake Sales Co., 1947 Broadway, New York, N. Y. "Lasco." (See page 825.)
Lasco—See Lake Sales Co.
Lumidor—See Auto Specialty Sales Co.
M-R Co., 122 N. 14th St., Lincoln, Neb.
Mantle & Co., 1907 Park Ave., New York, N. Y. "Pacco."
Manufacturers Distributing Co., Seventh & Pine Sts., St. Louis, Mo. "Wegemann."
Motor Craft Shops, 188 Dartmouth St., Boston, Mass. "Hydro-Juster."
Motor Fuel Saver Corp., 50 Church St., New York, N. Y.
No-Nox Co., 18 W. 34th St., New York, N. Y.
Oxgin-iza—See Puritan Machine Works.
Pacco—See Mantle & Co.
Popp Mfg. Co., M. L., 343-45 33d Ave., Milwaukee, Wis.
Puritan Machine Works, 7 Hersam St., Stoneham, Mass. "Oxgin-iza."
Redco Mfg. Corp., Minneapolis, Minn.
Reed & Co., P. C., 4525 N. Clark St., Chicago, Ill. "Wonder."
S & H Mfg. Co., Palace Bldg., Minneapolis, Minn.
Special Appliance Corp., Chicago, Ill. (See page 1021.)
Speedo, 405 Lexington Ave., New York, N. Y.
Steel Products Co., Rice Lake, Wis. "Vapogas."
Strasburg Mfg. Co., J. L., Albert Lea, Minn.
Tankii Chemical Sales Co., 224 High St., Cleveland, O.
Thomas-Armstrong Co., Geneva, N. Y.
Till, William F., 150 Nassau St., New York, N. Y. "Vapor-Humidifier."
Tremont Products Co., 216 High St., Boston, Mass. "Humistat."
Vapogas—See Steel Products Co.
Vapor-Humidifier—See Till, William F.
Vapor Inspirator Co., 1225 W. Tenth St., Kansas City, Mo.
Victor—See Campbell, V. R.
Water Gas Carburetor Co., 2207 Penn St., Kansas City, Mo.
Weeks Mfg. Co., 421-37 National Ave., Milwaukee, Wis. "Camel."
Wegemann—See Manufacturers Distributing Co.
Whitney Mfg. Co., R. S., 74 Nichols St., Lewiston, Me.
Wonder—See Reed & Co.
Workrite Mfg. Co., 5602 Euclid Ave., Cleveland, O.

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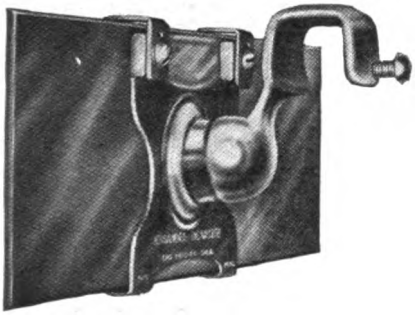
The ESSANDEE

INTERIOR DRIVE

REARSITE MIRROR



A real adjustable mirror. Can be instantly adjusted to any angle by slight pressure of the fingers. No nuts or screws to fool with. Made on ground bevel plate mirror. Mounted in finely nickeled bracket, $5.00.

Dealer and Jobber inquiry invited.

ESSANDEE CORPORATION
330 W. 16th St., Los Angeles, Calif.

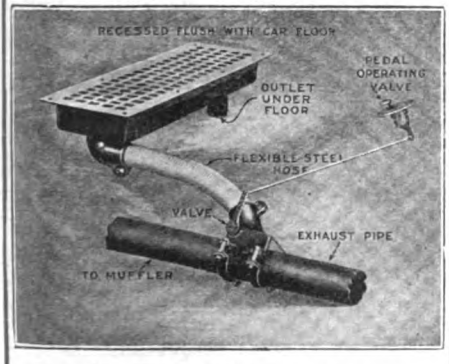
Motobestos Solid Woven Brake Lining

Write us and we will advise you how to secure one of our pressed steel brake lining cabinets without any cost to you.

ASBESTOS & RUBBER WORKS OF AMERICA

CLEVELAND, OHIO
2735 Prospect Ave.

NEW YORK CITY
1821 Broadway



A Winter Necessity

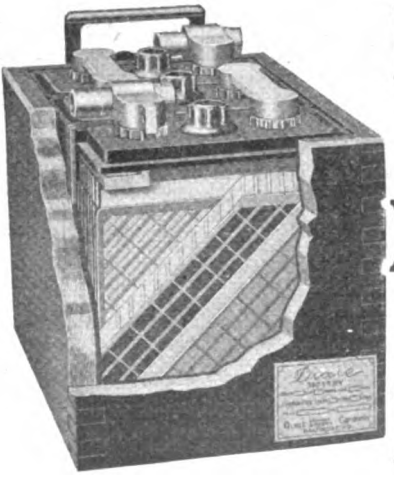
Needed by every car owner in your town. Heats car from exhaust gas at no operating expense. Goes through aluminum radiator and heats pure air which warms car.

Made of aluminum and pressed steel, finished in nickel. Floor Plate measures 7 by 21 inches. The most efficient Auto Heater on the market.

First and Last Cost Complete—$30.00.

Liberal Discount to Dealers

THE EUREKA ACCESSORY COMPANY
404-405 Dollar Bank Building
Youngstown, Ohio



DIXIE

Dixie diagonal plates, made of special developed alloy, give the battery longer life and greater capacity. These diagonal plates, in connection with our special separators, practically eliminate buckling—"The old age of a storage battery."

Territory Open

Send for our dealer proposition and free descriptive literature on the DIXIE Battery.

DIXIE STORAGE BATTERY CO.
BALTIMORE MARYLAND

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MOISTENERS, Air or Mixture, for Fords

(For feeding water into the intake manifold)

Adco—See American Automatic Devices Co.

Aderholdt Mfg. Co., 1528 Broadway, Denver, Colo. "H-A."

American Automatic Devices Co., 515 W. Monroe St., Chicago, Ill. "Adco." (See page 643.)

Apco Mfg. Co., Providence, R. I.

Auto Specialty Sales Co., Foster Bldg., Denver, Colo. "Lumidor."

Auto Water Pep Co., 2204 S. Michigan Ave., Chicago, Ill.

Campbell, V. R., 126 Pennsylvania Ave., Elmira, N. Y. "Victor."

De-Carbo—See Hastings Mfg. Co.

Friestedt Mfg. Co., 2924-32 W. Lake St., Chicago, Ill. "Hydronizer."

Gas-E-Co.—See Gasoline Economy Co.

Gasoline Economy Co., Colonial Trust Bldg., Philadelphia, Pa. "Gas-E-Co."

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 174 and 175.)

H-A—See Aderholdt Mfg. Co.

H-O-B Mfg. Co., W. Michigan & Warman Aves., Indianapolis, Ind. "Ideal."

Hastings Mfg. Co., 36 Mill St., Hastings, Mich. "De Carbo." (See page 567.)

Hayes-Aderholdt Mfg. Co., Denver, Colo.

Humistat—See Tremont Products Co.

Hydronizer—See Friestedt Mfg. Co.

Ideal—See H-O-B Mfg. Co.

J-M Oxygenerator Co., 1929 E. 40th St., Cleveland, O.

Lumidor—See Auto Specialty Sales Co.

Till, Wm. F., 150 Nassau St., New York, N. Y.

Victor—See Campbell, V. R.

MOLDED INSULATION—See Composition, Insulating

MOLDS, COMPOSITION, HARD AND SOFT RUBBER—See Dies, Jigs, Tools and Fixtures

MOLDS, Lead

(Molds for forming burning lead from scrap)

Ambu—See American Bureau of Engineering.

American Bureau of Engineering, Michigan Ave. & 16th St., Chicago, Ill. "Ambu." (See page 485.)

Battery Equipment & Supply Co., 1458-60 S. Michigan Blvd., Chicago, Ill. "H. B." (See page 387.)

Camold—See Campbell Engineering Corp.

Campbell Engineering Corp., 3803 Woodward Ave., Kansas City, Mo. "Camold."

Colgan Co., J. W., 4 Alden Ct., Boston, Mass.

H. B.—See Battery Equipment & Supply Co.

Orum, S. R. M., 5143 Keyser St. (North Philadelphia), Philadelphia, Pa.

Randall & Noll, 317 S. 11th St., Lincoln, Neb.

Shonts Co., H. B., 157 W. 54th St., New York, N. Y. (Metropolitan Distributor for "Ambu" Molds.) (See page 733.)

Storage Battery Supply Co., 1535 Cherry St., Philadelphia, Pa. (See page 1125.)

MOLDS and CORES, Tire Vulcanizing

Akron Rubber Mold & Machine Co., 917 Sweitzer Ave., Akron, O.

Altenburg Tire Equipment Co., Davenport, Ia.

Bridgewater Machine Co., 31-37 Cherry St., Akron, O.

Brown Mfg. Co., Jesse F., 2652 Long Beach Ave., Los Angeles, Cal.

Claflin Engineering Co., Lancaster, O.

Duncan Co., F. M., 114 E. Ohio St., Chicago, Ill.

Haywood Tire & Equipment Co., 1230 N. Capitol Ave., Indianapolis, Ind.

Kuhlke Machine Co., 48-58 W. Exchange St., Akron, O.

Legnard Co., A. B., Waukegan, Ill. "Vulcan." (See page 649.)

Miller, Chas E., Anderson, Ind.

Milwaukee Auto Specialty Co., 705-15 Chestnut St., Milwaukee, Wis. "Radium."

National Rubber Mold Co., 2763 Blake St., Denver, Colo.

Phoenix Tire & Rubber Co., 1614 S. Michigan Ave., Chicago, Ill.

Radium—See Milwaukee Auto Specialty Co.

Redex—See Rubber Products & Machinery Co.

Rubber Products & Machinery Co., 225 E. Ninth St., Los Angeles, Cal. "Redex."

Smith One-Heat System, Cedar & Emerick Sts., South Bend, Ind.

Sturgis Tire & Rubber Co., Oakland, Cal. (See page 647.)

Summit Mold & Machine Co., 1022-24 S. High St., Akron, O.

Thropp's Sons Co., John E., Trenton, N. J.

Utility Tire Machinery Co., 401 Penn Ave., Joplin, Mo.

Vulcan—See Legnard Co.

Western Rubber Mold Co., 243 N. Crawford Ave., Chicago, Ill. (See page 647.)

Wilkinson-Beaver Mfg. Co., St. Louis, Mo. (See page 647.)

Williams Foundry & Machine Co., 100 Walnut St., Akron, O.

MOLYBDENUM, Ferro

Climax Molybdenum Co., 61 Broadway, New York, N. Y.

Vanadium Corp. of America, Equitable Bldg., New York, N. Y.

MONKEY WRENCHES—See Wrenches, Nut and Bolt

MONOGRAMS, DECALCOMANIA — See Transfers, Decalcomania

MONOGRAMS, Ornamental Metal

Autograms—See Wood-Detroit Mfg. Co.

Bernard Co., J., 422-30 E. 53d St., New York, N. Y.

Colgan Co., J. W., 4 Alden Ct., Boston, Mass.

Creuts Plating Co., Fifth & Elm Sts., Cincinnati, O.

Crowe Name Plate & Engraving Co., 1749 Grace St., Chicago, Ill. (See page 709.)

Dickson, James, 333 S. Clinton St., Chicago, Ill.

Essex, C. F., 13428 97th Ave., Richmond Hill, N. J.

Greenduck Co., Van Buren & Hoyne Aves., Chicago, Ill.

Handel Co., Louis, 138 Center St., New York, N. Y.

Hicock Mfg. Co., 39 N. Water St., Rochester, N. Y.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

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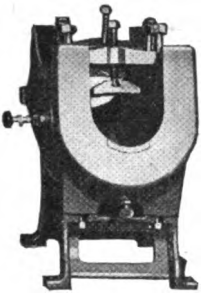
Sectional Molds *for* Pneumatic Truck Tire Repairing

Repairing Pneumatic truck tires is a big proposition now and there's plenty of this class of business in your locality. One job always means a repeat order.

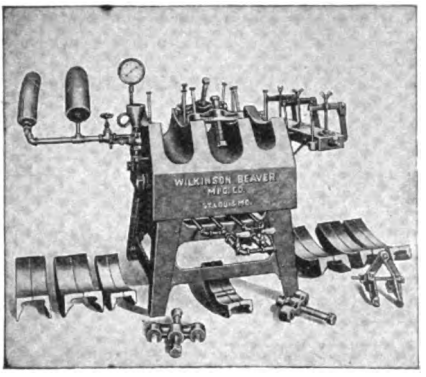


Our truck molds—¼ circle, in 6, 7, 8 and 9 inch, machined with round or flat bottom, are ready for immediate shipment.

Write for Catalog

We have a fair sized stock on hand, but rapid growth of this business is making heavy demands on it. So get busy and send for descriptive literature and prices at once. An investment now guarantees a profitable business throughout the year.

Western Rubber Mold Co.
243 North Crawford Avenue, Chicago, Illinois



3 Outside, 2 Inside Repairs at a Time

This Type F sectional steam Combination Vulcanizer is our very latest design.

Some of its exclusive labor and time-saving features include: pear-shaped inside cores; special tightening clamp; 4x21 inch tube vulcanizer; cavities arranged to handle 3x3½, 4x4½, and 5x3½ inch sectional repairs.

Boiler self-contained—equipped with burners (gas or gasoline), steam gauge, filler valve, pop safety valve.

Write for full particulars

Wilkinson-Beaver Manufacturing Co.
St. Louis, Mo.

W. B. 3-Cavity Vulcanizer

Announcement

STURGES, the Inventor of the Tire Sole Idea, announces to the motor world the perfection of his latest achievement, the STURGES CORD TIRE SOLE.

All live dealers will recognize in this new STURGES innovation great possibilities from a money-making standpoint.

The Cord Tire has proven itself to be the ultimate in tire manufacture. The STURGES CORD TIRE SOLE is the ultimate in Tire Soles.

Full information concerning this wonderful new STURGES invention will be sent to Dealers upon request.

THE STURGES TIRE & RUBBER CO.
Oakland, California

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MONOGRAMS, Ornamental Metal (Continued)

Johnston Co., J. G., 79 Sudbury St., Boston, Mass.
Matthews & Co., Jas. H., 1537 Forbes Field, Pittsburgh, Pa. (See page 905.)
Mulhaupt, F. Jos., 227 N. Fifth St., Lafayette, Ind.
Murdock Co., James W., 116 Opera Pl., Cincinnati, O.
New York Stencil Works, 100 Nassau St., New York, N. Y.
Salman, John A., 110 Tremont St., Boston, Mass.
Schwerdtle Stamp Co., 39-41 Cannon St., Bridgeport, Conn.
Stafford Co., N., 67 Fulton St., New York, N. Y.
Vego Hair Mfg. Co., Palatka, Fla.
Walter & Sons, N. C., 3 Park Row, New York, N. Y.
Whiteford & Co., Jos. G., 165 N. Jefferson St., Chicago Ill.
Wood-Detroit Mfg. Co., Marquette Bldg., Detroit, Mich. "Autograms."

MONOGRAMS, RADIATOR—See Monograms, Ornamental

MORTISING MACHINES—See Machines, Wood Mortising

MOSS, Upholstery

(For use instead of Hair; for Hair—See Hair, Upholstery; for Upholstery, Felt—See Felt Upholstery)

American Moss Products Corp., 300 Fifth Ave., New York, N. Y. "Amproco."
Amproco—See American Moss Products Co.
Babin, Luke B., Moss St., White Castle, La. "Babinmoss."
Babinmoss—See Babin, Luke B.
Crescent City Moss Ginnery Co., Lopez & Perdido Sts., New Orleans, La.
Kohlmann Moss & Cotton Felt Mfg. Co., 411 Magazine St., New Orleans, La.
Landers Bros. Co., Dept. A2, Toledo, O. (See page 605.)
Schwing Co., R. I., Plaquemine, La.
Snell Co., Charles W., 321 S. Jefferson St., Chicago, Ill.
Sutherland Co., F. L., 139 Beaubien St., Detroit, Mich. (See page 803.)
Woll & Sons Mfg. Co., Moscher & Berks Sts., Philadelphia, Pa.

MOTION RECORDERS—See Recorders, Vehicle

MOTOR ATTACHMENTS—See Wheels, Motor

MOTOR BOATS—See Section I

MOTOR COMMUTATORS—See Commutators, Electric Motor

MOTOR CONTROLLERS—See Controllers, Electric Motor

MOTOR DECARBONIZING MACHINES—See Machines, Engine Decarbonizing

MOTOR DRIVEN SAW BENCHES—See Benches, Motor Driven Saw

MOTOR GENERATORS—See Dynamos, and Motor Generators

MOTOR HEAT SEALS—See Seals, Motor Heat

MOTOR HOODS—See Hoods, Engine

MOTOR RACKS—See Racks, Engine

MOTOR REPAIR STANDS—See Stands, Engine Repair

MOTOR TESTING INSTRUMENTS—See Instruments, Engine Testing

MOTOR TRUCKS—See Section I

MOTOR WHEELS—See Wheels, Motor

MOTORCYCLES—See Section I

MOTORISTS' AXES—See Axes, Motorists

MOTORISTS' HATCHETS—See Axes, Motorists

MOTORS, AIRCRAFT GASOLINE—See Engines, Aircraft Gasoline

MOTORS, DETACHABLE—See Engines, Motor Boat Outboard

MOTORS, Electric Automobile

Diehl Mfg. Co., Trumbull & Second Sts., Elizabethport, N. J.
General Electric Co., Schenectady, N. Y. (See page 793.)
Lincoln Electric Co., 38th St. & Kelley Ave., N. E., Cleveland, O.
Wagner Electric Mfg. Co., 6400 Plymouth Ave., St. Louis, Mo.
Westinghouse Electric & Mfg. Co., 82 Worthington St., Springfield, Mass. (See pages 940 and 941.)

MOTORS, GASOLINE AUTOMOBILE—See Engines, Automobile Gasoline

MOTORS, KEROSENE—See Engines, Motor Boat, Kerosene

MOTORS, MOTOR BOAT GASOLINE—See Engines, Motor Boat Gasoline

MOTORS, MOTOR BOAT OUTBOARD OR DETACHABLE—See Engines, Motor Boat Outboard or Detachable

MOTORS, MOTORCYCLE GASOLINE—See Engines, Motorcycle Gasoline

MOTORS, STEAM—See Engines, Steam

MOULDING, BODY—See Moulding, Brass; also Moulding, Steel

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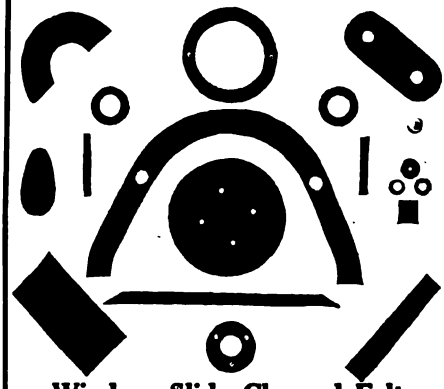
CUT FELTS

OF EVERY DESCRIPTION



Window Slide Channel Felt

WASHERS	PLUGS
WICKS	DISCS
GASKETS	WHEELS
PACKING	ALL SPECIAL
STRIPS	CUTTING

THE FELTERS CO., Inc.

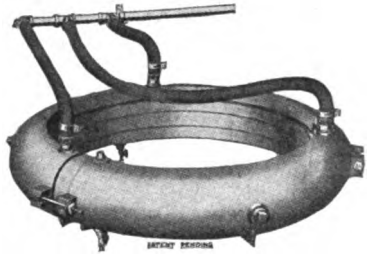
CUTTING FACTORY

MILLBURY, MASS.

WE MANUFACTURE THE FELT

Retread Tires

With The VULCAN Method



Vulcan Molds are made in Four sizes. They are instantly adjustable to fit all sizes of tires from 30x3 to 37x5.

Vulcan Molds cure the Complete Tread in one Heat. Other machines take from 2¼ to 3 hours to accomplish what our Molds do in 45 minutes.

Tires Retreaded by the Vulcan Method give from 5,000 to 6,000 miles of service.

Garages, Tire Stores and Vulcanizing Shops should all start in this Great Money Making business. "We help finance you to get started."

A. B. LEGNARD COMPANY

Dept. 14 WAUKEGAN, ILL.

PENMAID

Automobile Gears and Sprockets give you the best material, finest workmanship and unexcelled service.

Bevel Gears cut theoretically correct. We make Spur, Worm, Angle, Mitre, Internal Gears.

SPROCKETS FOR ALL MOTOR TRUCKS

Heat Treating of Every Description

Pennsylvania Gear and Machine Co.

East Tioga, Weikel & Janney Streets, Philadelphia, Pa.

O. K. GIANT STORAGE BATTERIES

Points of Superiority Which Are Startling

1 20 per cent more power
2 Fires more intense spark
3 More mileage per gallon of gas
4 No corrosion
5 No sulphation
6 Will not heat up
7 No repair bills
8 No attention required
9 Will not freeze
10 No repairs
11 No buckled plates
12 Fool proof
13 Battery troubles ended
14 Price the same

O. K. GIANT BATTERY CORP.

PLANT AND GENERAL OFFICES

GARY INDIANA

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MOULDING, BRASS

American Brass Co., Waterbury, Conn. (See page 165.)

Brasco Mfg. Co., 5025-35 S. Wabash Ave., Chicago, Ill.

Bridgeport Brass Co., Bridgeport, Conn. (See page 907.)

Columbus Brass Co., 540 Dublin Ave., Columbus, O.

Cowles & Co., C., New Haven, Conn. (See page 651.)

Dahlstrom Metallic Door Co., E. Second & Buffalo Sts., Jamestown, N. Y.

Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.

English & Mersick Co., New Haven, Conn. (See pages 623 and 783.)

Jonah & George, Little's Ct., Merrimac, Mass.

Manhattan Brass Co., 328 E. 28th St., New York, N. Y.

Metal Stamping Co., 12th St. & East Ave., Long Island City, N. Y.

Morton Mfg. Co., 5135-39 W. Lake St., Chicago, Ill. (See page 1023.)

Randolph-Clowes Co., 384 Bank St., Waterbury, Conn.

Rome Brass & Copper Co., E. Dominick St., Rome, N. Y.

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.

Smith, Wire & Iron Works, F. P., 2340-48 Clybourne Ave., Chicago, Ill.

Spiro Mfg. Co., C., 68-72 E. 131st St., New York, N. Y. "Uniq."

Uniq—See Spiro Mfg. Co.

White Mfg. Co., 155 Cannon St., Bridgeport, Conn.

Woodruff & Sons Co., Walter W., Mount Carmel, Conn.

Zenite Metal Co., 201-05 N. West St., Indianapolis, Ind. (See page 637.)

MOULDING, Flexible Leather

Anchor—See Indianapolis Saddlery Co.

Carter Co., George R., Connersville, Ind.

Indianapolis Saddlery Co., 237 S. Meridian St., Indianapolis, Ind. "Anchor."

Zenite Metal Co., 201-05 N. West St., Indianapolis, Ind. (See page 637.)

MOULDING, LEATHER — See Moulding, Flexible Leather

MOULDING, Running Board

(See also Moulding, Brass; also Moulding, Steel)

Alite—See Zenite Metal Co.

Aluminum Co. of America, Oliver Bldg., Pittsburgh, Pa.

Brasco Mfg. Co., 5025-35 S. Wabash Ave., Chicago, Ill.

Bridgeport Brass Co., Bridgeport, Conn. (See page 907.)

Dahlstrom Metallic Door Co., E. Second & Buffalo Sts., Jamestown, N. Y.

English & Mersick Co., New Haven, Conn. (See pages 623 and 783.)

Erdle Perforating Co., 171 York St., Rochester, N. Y. (See page 633.)

Higgins Mfg. Co., Newport, Ky.

Kawneer Mfg. Co., 931 Front St., Niles, Mich.

Mertz Mfg. Co., John, Water & Decatur Sts., Sandusky, O.

Morton Mfg. Co., 5133-39 W. Lake St., Chicago, Ill. (See page 1023.)

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.

Spiro Mfg. Co., C., 68-72 E. 131st St., New York, N. Y. "Uniq."

Uniq—See Spiro Mfg. Co.

Woodruff & Sons Co., Walter W., Mount Carmel, Conn.

Zenite Metal Co., 201-05 N. West St., Indianapolis, Ind. "Alite." (See page 637.)

MOULDING, Steel

Brasco Mfg. Co., 5025-35 S. Wabash Ave., Chicago, Ill.

Dahlstrom Metallic Door Co., E. Second & Buffalo Sts., Jamestown, N. Y.

Empire Art Metal Co., College Point, N. Y.

Kawneer Mfg. Co., 931 Front St., Niles, Mich.

Morton Mfg. Co., 5133-39 W. Lake St., Chicago, Ill. (See page 1023.)

Perfection Metal Products Co., College Point, N. Y.

Spiro Mfg. Co., C., 68-72 E. 131st St., New York, N. Y. "Uniq."

Uniq—See Spiro Mfg. Co.

MOUNTING ATTACHMENTS, MAGNETO, for Fords—See Attachments, Magneto Mounting

MOVEMENT RECORDERS—See Recorders, Vehicle

MUD DEFLECTORS, for Fords—See Pans, Radiator Splash

MUD GUARD ANTI-RATTLERS, for Fords—See Braces, Mud Guard

MUD GUARD BRACES, for Fords—See Braces, Mud Guard

MUD GUARD CLAMPS, for Fords—See Braces, Mud Guard

MUD GUARD SILENCERS, for Fords—See Braces, Mud Guard

MUD GUARDS — See Fenders or Mud Guards

MUD HOOKS—See Chains or Grips, Non-Skid

MUFFLER CUT-OUT PEDALS—See Pedals, Horn

MUFFLER CUT-OUTS—See Valves, Muffler Cut-out

MUFFLER PAINTS—See Paints, Exhaust Pipe

MUFFLER SHELLS—See Shells, Muffler for Fords

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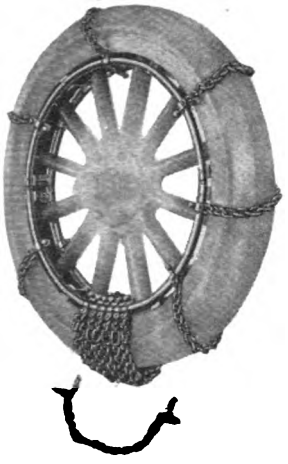
Lutz

"INDIVIDUAL" SAFETY Chains



1 or 100 CHAINS WHEN and WHERE THEY ARE NEEDED

Constantly change position on tread of tire. No damage to wheel or tire. Instantly attached or removed. Write for catalog and prices.

Lutz Company, Inc.

Morris, Bambrey & Moore Sts., Phila.

TENAX (BRONZES) TENITE (ALUMINUM)

CASTINGS

"Of the Better Kind"

Send us your Blueprints or Specifications

There's a TENAX or TENITE number for every known use of Cast BRASS, BRONZE or ALUMINUM

THE GENERAL BRONZE FOUNDRY COMPANY

General Office - - - 5810 Superior Avenue

CLEVELAND, O.

TRY TENAX No. 12 SPECIAL

For High Speed Bushings and Bearings, Stock Bars, Standard Sizes, in the rough. Machine Bushings

C. COWLES & CO.

NEW HAVEN, CONN., U. S. A.

Manufacturers of Plain, Locking, Pillar, Lever Lock, Inside and Pull-to Door Handles;—Curtain Rollers and Supports;—Interior Dome, Corner Tonneau, Angle and Disappearing Lights;—Pillar, Hearse, Side, Step, Parking and Cowl Lamps;—Electric Cigar Lighters;—Switches;—Ash Trays;—Concealed and Exposed Vanity Cases;—Window Anti-Rattlers and Fasteners;—Broad Lace Holders and Ends—Coat Hooks;—Umbrella Drainers and Holders;—Key Hole Covers;—Back Lights;—Strap Loops;—Front Window Fasteners and Fixtures;—Curtain Fasteners;—Robe Cord Fixtures;—Filled Moulding;—Moulding Joiners and Finishers;—Window, Side and Bottom Channel;—Window Fence;—Mechanical Window Lifts;—Landau Top Fasteners.

INTERIOR DOME LIGHT

No. 4½ Vernon

With patented self-contained switch
Diameter overall 4½ inches
Diameter of glass 3 inches
Projection from trim 1½ inches

SIDE LAMP

No. 1 Vale

Length over all, 3⅞ inches
Diameter over glass flange, 2½ inches
Furnished either full nickel plated or with black enameled body

PULL-TO DOOR HANDLE

Length overall 6 inches
Length of grasp 4 inches
No. 33. Full nickel plated
No. 330. Nickel plated with black hard rubber grasp

Door Locking Handle

Grasp is 4 1/16 inches long x 1 1/16 inches wide
No. 106. Full nickel plated
No. 1060. Nickel plated with black hard rubber grasp

WINDOW ANTI-RATTLER

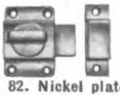
No. 21. Nickel plated

No. 81

SMOKING CASE

Length 4¾ inches
Height 4 inches overall
Width 1⅝ inches
Black morocco covered with nickel plated safety match box holder and ash tray

FRONT WINDOW FASTENER

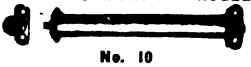


No. 82. Nickel plated

CURTAIN FASTENERS

No. 6 Ideal No. 12 Success
For single curtains

AUTOMATIC CURTAIN ROLLER



No. 10

No. 10. Reversible
Used for either right or left hand

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MUFFLERS, Exhaust

Anti-Explo—See Gemco Mfg. Co.

Buffalo Pressed Steel Co., Buffalo, N. Y. (See page 655.)

Dunkirk Corp., 12-16 E. Second St., Dunkirk, N. Y. "Ejector."

Ejector—See Dunkirk Corp.

El Dorado—See Jones Auto Muffler Co.

Emco Mfg. Co., 4 Griswold St., Binghamton, N. Y. "Taber," "Solo." (See page 497.)

Ever Clean—See Miller & Co.

Fairchild & Co., Jas. E., 89 W. Boston Post Rd., Mamaroneck, N. Y.

G. P. & F.—See Geuder, Paeschke & Frey Co.

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. "Anti-Explo." (See pages 174 and 175.)

Geuder, Paeschke & Frey Co., 1365-1700 St. Paul Ave., Milwaukee, Wis. "G. P. & F.," "Maxim." (See page 949.)

Gray-Hawley Mfg. Co., 3123-31 Jefferson Ave., E., Detroit, Mich.

Hersh & Bro., 645 Mill St., Allentown, Pa.

International Steel Products Co., Hartford, Wis. "Uvee."

Jones Auto Muffler Co., 65 Boston Post Rd., Mamaroneck, N. Y. "El Dorado."

Kells Mfg. Co., W. J., 521-25 W. 45th St., New York, N. Y.

Lawco—See Lawson Co

Lawson Co., F. H., Dept. D, Cincinnati, O. "Lawco." (See page 327.)

Maxim—See Geuder, Paeschke & Frey Co.

Michigan Stamping Co., 11631 Mack Ave., Detroit, Mich.

Miller & Co., Spring Valley, Ill. "Ever Clean."

Mitchell & Son, G. F., 6501 Cedar Ave., Cleveland, O.

Murray Mfg. Co., J. W., 571 Clay Ave., Detroit, Mich.

Oldberg Mfg. Co., Detroit, Mich. (See page 653.)

Powell Muffler Co., Utica, N. Y. (See page 655.)

Solo—See Emco Mfg. Co.

Taber—See Emco Mfg. Co.

Titeflex Metal Hose Corp., Badger Ave. & Runyon St., Newark, N. J. (See page 293.)

Uvee—See International Steel Products Co.

Vacuum Muffler Corp. of America, 154 Nassau St., New York, N. Y. (See page 657.)

Yankee Co., 69 Genesee St., Utica, N. Y.

York Corrugating Co., York, Pa.

MUFFLERS, Exhaust, for Fords

Apco. Mfg. Co., Providence, R. I.

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern & Southern Distributors for "Spencer" Mufflers.) (See page 275.)

Buffalo Pressed Steel Co., Buffalo, N. Y. "Bupresco." (See page 655.)

Bupresco—See Buffalo Pressed Steel Co.

Canton Co., A. S., 174 Franklin St., New York, N. Y.

Cuthbert-Freidberg Mfg. Co., 1 Dennis St., New Brunswick, N. J.

Dunham Co., Thos., Aurora, Ill. (See page 167.)

Dunkirk Corp., 12-16 E. Second St., Dunkirk, N. Y. "Ejector."

Ejector—See Dunkirk Corp.

El Dorado—See Jones Auto Muffler Co.

Emco Mfg. Co., 4 Griswold St., Binghamton, N. Y. "Taber." (See page 497.)

Ever Clean—See Miller & Co.

Fairchild & Co., Jas. E., 89 W. Boston Post Rd., Mamaroneck, N. Y.

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 174 and 175.)

Geuder, Paeschke & Frey Co., 1365-1700 St. Paul Ave., Milwaukee, Wis. "Maxim." (See page 949.)

Gray-Hawley Mfg. Co., 3123-31 Jefferson Ave., E., Detroit, Mich.

Howe Lamp & Mfg. Co., 115-23 E. Ontario St., Chicago, Ill.

Jones Auto Muffler Co., 65 Boston Post Rd., Mamaroneck, N. Y. "El Dorado."

Lawco—See Lawson Co.

Lawson Co., F. H., Dept. D., Cincinnati, O. "Lawco." (See page 327.)

Maxim—See Geuder, Paeschke & Frey Co.

Miller & Co., Spring Valley, Ill. "Ever Clean."

Oldberg Mfg. Co., Detroit, Mich. (See page 653.)

Powell Muffler Co., Utica, N. Y. (See page 655.)

Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Sterling."

Spencer Metal Products Co., Spencer, O. (See page 766.)

Sterling—See Republic Auto Parts Co.

Taber—See Emco Mfg. Co.

Titeflex Metal Hose Corp., Badger Ave. & Runyon St., Newark, N. J. (See page 293.)

Vacuum Muffler Corp. of America, 154 Nassau St., New York, N. Y. (See page 657.)

Yankee Co., 69 Genesee St., Utica, N. Y.

MUFFLERS, Motor Boat Exhaust

(See also Boxes, Underwater Exhaust)

Buffalo Pressed Steel Co., Buffalo, N. Y. "Bupresco." (See page 655.)

Bupresco—See Buffalo Pressed Steel Co.

Central Mfg. Co., 153 Liverpool St., Boston, Mass. "Thermex."

Dunkirk Corp., 12-16 E. Second St., Dunkirk, N. Y. "Ejector."

Eisenbrandt, F. B., Light St., Baltimore, Md.

Ejector—See Dunkirk Corp.

Fairchild & Co., Jas. E., 89 W. Boston Post Rd., Mamaroneck, N. Y.

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 174 and 175.)

Gray-Hawley Mfg. Co., 3123-31 Jefferson Ave., E., Detroit, Mich.

Oldberg Mfg. Co., Detroit, Mich. (See page 653.)

Thermex—See Central Mfg. Co.

Vacuum Muffler Corp. of America, 154 Nassau St., New York, N. Y. (See page 657.)

MUFFLERS, Motorcycle Exhaust

Dunkirk Corp., 12-16 E. Second St., Dunkirk, N. Y. "Ejector."

Ejector—See Dunkirk Corp.

Fairchild & Co., Jas. E., 89 W. Boston Post Rd., Mamaroneck, N. Y.

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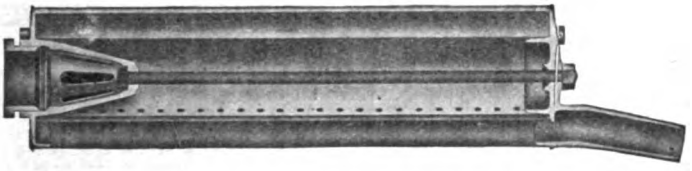
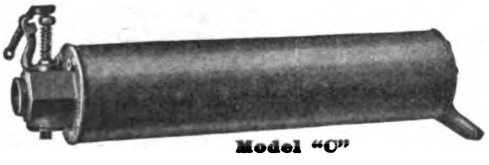
OLDBERG MUFFLERS



Interior Construction of Models "C", "D", "E", and "F"



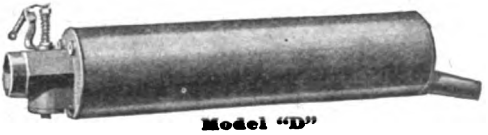
Model "C"

Model "C"

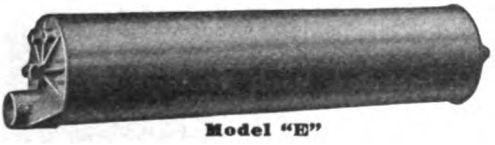
Outside diameter 4⅞". Length optional to 24". Tube sizes up to 2" O.D. Supplied with or without cut-out.

Model "D"

Outside diameter 5⅝". Length optional to 28". Tube sizes up to 2½" O. D. Supplied with or without cut-out.



Model "D"



Model "E"

Model "E"

Outside diameter 6¾". Length optional to 30". Tube sizes to 2⅞" O. D. Supplied with or without cut-out.

Model "F"

Outside diameter 4". Length optional up to 24". Tube sizes up to 2" O.D. Not supplied with cut-out.

Model "F"

OLDBERG SPECIAL SERVICE

We can supply from stock any of our standard Oldberg models illustrated herewith, and can make up, to your order, any special exterior construction or fitting which may be necessary to mount our muffler in your chassis. The standard constructions shown completely cover all the sizes which will be required by either pleasure or commercial motor vehicle manufacturers. Free samples to manufacturers upon receipt of the size of motor and exhaust tube and whether or not cut-out is required. Write for specifications and quotations.

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MUFFLERS, Motorcycle Exhaust (Continued)

Geuder, Paeschke & Frey Co., 1365-1700 St. Paul Ave., Milwaukee, Wis. "Maxim." (See page 949.)

Gray-Hawley Mfg. Co., 3123-31 Jefferson Ave., E., Detroit, Mich.

Maxim—See Geuder, Paeschke & Frey Co.

Oldberg Mfg. Co., Detroit, Mich. (See page 653.)

Vacuum Muffler Corp. of America, 154 Nassau St., New York, N. Y. (See page 657.)

MUFFLERS, Throat

(See also Clothing, Motorists)

Bradley Knitting Co., Delevan, Wis.

MUFFLERS, Tractor Exhaust

Buffalo Pressed Steel Co., Buffalo, N. Y. "Bupresco." (See page 655.)

Bupresco—See Buffalo Pressed Steel Co.

Dunkirk Corp., 12-16 E. Second St., Dunkirk, N. Y. "Ejector."

Ejector—See Dunkirk Corp.

Fairchild & Co., Jas. E., 89 W. Boston Post Rd., Mamaroneck, N. Y.

Gemco Mfg. Co., 666 S. Pierce St, Milwaukee, Wis. (See pages 174 and 175.)

Geuder, Paeschke & Frey Co., 1365-1700 St. Paul Ave., Milwaukee, Wis. "Maxim." (See page 949.)

Gray-Hawley Mfg. Co., 3123-31 Jefferson Ave., E., Detroit, Mich.

Lawson Co., F. H., Dept. D, Cincinnati, O. "Lawco." (See page 327.)

Maxim—See Geuder, Paeschke & Frey Co.

Oldberg Mfg. Co., Detroit, Mich. (See page 653.)

Powell Muffler Co., Utica, N. Y. (See page 655.)

Vacuum Muffler Corp. of America, 154 Nassau St., New York, N. Y. (See page 657.)

MULTIPLE SPINDLE DRILLS—See Drills, Multiple Spindle

NAILS, UPHOLSTERY—See Tacks, Upholstery

NAME PLATES—See Plates, Name

NATURAL LEATHER—See Leather, Natural

NEEDLE VALVES—See Valves, Needle

NICKEL STEEL—See Steel, Nickel

NIPPERS—See Pliers, Combination

NIPPLES, PIPE—See Fittings, Pipe

NIPPLES, PUMP—See Connections, Tire Pump

NON-EXPLOSIVE TANK FILLING TUBES—See Tubes, Non-Explosive Tank Filling

NON-FREEZING COMPOUNDS—See Compounds, Anti-Freezing

NON-SKIDS, TIRE—See Bands, Non-Skid; also Chains or Grips; also Treads, Tire; also Boxes, Sand

NOZZLES, Air Upholstery Cleaning

Romort Mfg. Co.—See Zinke Co.

Zinke Co., 1322-35 Michigan Ave., Chicago, Ill. (Sales Department for Romort Mfg. Co., Oakfield, Wis.) (See pages 310 and 311.)

NUMBER HOLDERS—See Holders, License

NUMBERS or HANGERS, License

(For License Holders—See Holders, License)

Aluminum Goods Mfg. Co., 15th & Franklin Sts., Manitowoc, Wis.

Limerick Co., J. Arthur, 900 N. Howard St., Baltimore, Md.

Niagara Falls Metal Stamping Works, 235-47 Tenth St., Niagara Falls, N. Y.

Sachs-Lawler Co., 1543 Lorimer St., Denver, Colo.

Shonk Works, Maywood, Ill.

Stafford Co., N., 67 Fulton St., New York, N. Y.

Stillman, A. P., 353 Jay St., Brooklyn, N. Y.

Whiteford & Co., Jos. G., 165 N. Jefferson St., Chicago, Ill.

NUMBERS, STEEL—See Stamps, Steel

NUT WRENCHES—See Wrenches, Nut and Bolt

NUTS, CASE HARDENED—See Nuts, Finished

NUTS, Castellated

Aetna Screw & Bolt Co., 104 S. Clinton St., Chicago, Ill.

Atlas Bolt & Screw Co., Cleveland, O. (See page 845.)

Automatic Screw Machine Products Co., 418 W. Grand Ave., Chicago, Ill.

Barkelew Metal Products Co., Richard & Bowen Sts., Dayton, O. (See page 657.)

Brightman Mfg. Co., Marion Rd., Columbus, O.

Brightman Nut & Mfg. Co., Sandusky, O. (See page 735.)

Chicago Screw Co., Homan Ave. & Fillmore St., Chicago, Ill. (See pages 837 and 841.)

Cincinnati Screw Co., Twightwee, O. (See page 701.)

Clark Bros. Bolt Co., Milldale, Conn.

Columbia Nut & Bolt Co., Bridgeport, Conn.

D. W. F. Engineering Co., 69 Sprague St., Providence, R. I.

Detroit Screw Works, 1494 Franklin St., Detroit, Mich.

Diebel, A. J., 976 Woodward Ave., Detroit, Mich. (Michigan, Indiana and Ohio Distributors for Brightman and Barkelew Nuts.) (See page 543.)

Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.

Empire City Screw Products Co., 12 W. 62d St., New York, N. Y. (See page 659.)

Erie Specialty Co., Erie, Pa.

Federal Nut, Bolt & Machine Co., 1639 Collamer Ave., Cleveland, O.

Federal Screw Works, 4725 Ellery St., Detroit, Mich.

Gordon-Little Co., 122-24 N. Senate Ave., Indianapolis, Ind.

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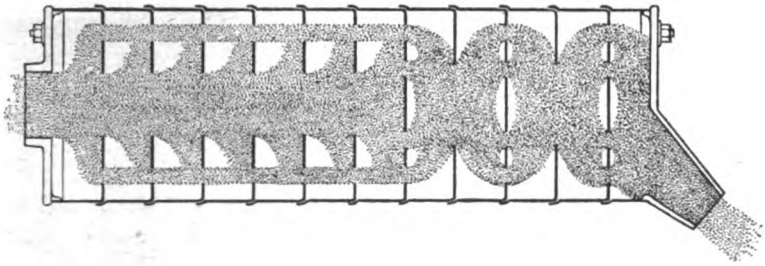

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NUTS, Castellated (Continued)

Graham Nut Co., 1317-19 W. Carson St., Pittsburgh, Pa.
Hagen Metal Products Co., St. Louis, Mo. (See page 729.)
Hartford Machine Screw Co., Hartford, Conn. (See page 839.)
Hill Pump Valve Co., Belmont & Knox Aves., Chicago, Ill.
Hyklas—See Parts Service Co.
Milton Mfg. Co., Milton, Pa.
National Acme Co., Cleveland, O. (See page 657.)
National Bolt & Nut Co., 62nd St. & A. V. R. R.; Pittsburgh, Pa.
National Lock Co., Rockford, Ill. (See page 843.)
National Machine Products Co., 4850 Bellevue Ave., Detroit, Mich.
P. & C. Nut Co., 519 Water St., Jackson, Mich.
Parts Service Co., 9307-11 Hough Ave., Cleveland, O. "Hyklas." (See page 1207.)
Phoenix Mfg. Co., Loraine and Grand River Aves., Detroit, Mich. (See page 1127.)
Rhode Island Tool Co., Providence, R. I.
Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.
St. Louis Screw Co., Clarence & Bulwer Aves., St. Louis, Mo.
Sandusky Nut Co., 122 Laurence St., Sandusky, O.
Sherman-Klove Co., 4519-23 W. Harrison St., Chicago, Ill. (See page 719.)
Upson Nut Co., Unionville, Conn.
U. S. Automatic Co., Amherst, O.
Western Automatic Machine Screw Co., Elyria, O. (See page 659.)
Western Screw-Products Co., St. Louis, Mo. (See page 1177.)
Wood & Spencer Co., 1930 E. 61st St., Cleveland, O.
Worcester Machine Screw Co., 26 Haviland St., Worcester, Mass.

NUTS, Finished and Case Hardened

Atlas Bolt & Screw Co., Cleveland, O. (See page 845.)
Barkelew Metal Products Co., Richard & Bowen Sts., Dayton, O. (See page 657.)
Brightman Mfg. Co., Marion Rd., Columbus, O.
Brightman Nut & Mfg. Co., Sandusky, O. (See page 735.)
Chicago Screw Co., Homan Ave. & Fillmore St., Chicago, Ill. (See pages 837 and 841.)
Cincinnati Screw Co., Twightwee, O. (See page 701.)
Clark Bros. Bolt Co., Milldale, Conn.
Columbia Nut & Bolt Co., Bridgeport, Conn.
Columbus Bolt Works Co., Columbus, O. (See page 155.)
Detroit Screw Works, 1494 Franklin St., Detroit, Mich.
Diebel, A. J., 976 Woodward Ave., Detroit, Mich. (Michigan, Indiana and Ohio Distributors for Brightman and Barkelew Nuts.) (See page 543.)
Empire City Screw Products Co., 12 W. 62d St., New York, N. Y. (See page 659.)
Erie Specialty Co., Erie, Pa.
Falls Rivet Co., Kent, O.
Foster Bolt & Nut Mfg. Co., 3556 E. 72d St., Cleveland, O. "Perfection."
Garland Mfg. Co. (W. Pittsburgh,), Pittsburgh, Pa.
Hartford Machine Screw Co., Hartford, Conn. (See page 839.)
Haskell Mfg. Co., Wm. H., 24 Commerce St., Pawtucket, R. I.
Hyklas—See Parts Service Co.
Michigan Bolt & Nut Works, ft. Meldrum Ave., Detroit, Mich.
Milton Mfg. Co., Milton, Pa.
National Acme Co., Cleveland, O. (See page 657.)
National Bolt & Nut Co., 62d St. & A. V. R. R., Pittsburgh, Pa.
National Machine Products Co., 4850 Bellevue Ave., Detroit, Mich.
National Screw & Tack Co., 2440 E. 75th St., Cleveland, O.
Parts Service Co., 9307-11 Hough Ave., Cleveland, O. "Hyklas." (See page 1207.)
Pawtucket Mfg. Co., 327 Pine St., Pawtucket, R. I.
Peninsular Milled Screw Co., 6910 E. Lafayette St., Detroit, Mich.
Perfection—See Foster Bolt & Nut Mfg. Co.
Phoenix Mfg. Co., Loraine and Grand River Aves., Detroit, Mich. (See page 1127.)
Pittsburgh Screw & Bolt Co., Preble Ave. (N. S.), Pittsburgh, Pa.
Reed & Prince Mfg. Co., Duncan Ave., Worcester, Mass.
Rhode Island Tool Co., Providence, R. I.
Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.
St. Louis Screw Co., Clarence & Bulwer Aves., St. Louis, Mo.
Sandusky Nut Co., 122 Laurence St., Sandusky, O.
Sherman-Klove Co., 4519-23 W. Harrison St., Chicago, Ill. (See page 719.),
Upson-Nort Co., Unionville, Conn.
U. S. Automatic Co., Amherst, O.
Western Automatic Machine Screw Co., Elyria, O. (See page 659.)
Wood & Spencer Co., 1930 E. 61st St., Cleveland, O.
Worcester Machine Screw Co., 26 Haviland St., Worcester, Mass.

NUTS, HARDENED—See Nuts, Finished

NUTS and WASHERS, Lock

Absolute—See American Lock-Nut Co.
American Lock-Nut Co., 122 S. Michigan Ave., Chicago, Ill. "Absolute."
American Nut & Bolt Fastener Co., 3 Ontario St., Pittsburgh, Pa.
Andrix Lock-Nut Co., Locust & Michigan Sts., Adrian, Mich.
Arghis & Co., E. J., 74 Wall St., New York, N. Y. "Evans."
Boss Nut Co., 1732-54 N. Kolmar Ave., Chicago, Ill.
Cincinnati Screw Co., Twightwee, O. (See page 701.)
Cincinnati Screw & Tap Co., 2442 Beekman St., Cincinnati, O.
Columbia Nut & Bolt Co., Bridgeport, Conn. "Gib."
Drake Lock Nut Co., 7418 Stanton Ave., Cleveland, O.
Empire City Screw Products Co., 12 W. 62d St., New York, N. Y. (Assortments only.) (See page 659.)
Evans—See Arghis & Co.
Gib—See Columbia Nut & Bolt Co.
Hidalgo Steel Co., 253 Broadway, New York, N. Y. "Skeleton."
Hobbs Mfg. Co., 26 Salisbury St., Worcester, Mass. (Sole Distributors for O. K. Nut Lock Co., Providence, R. I.)

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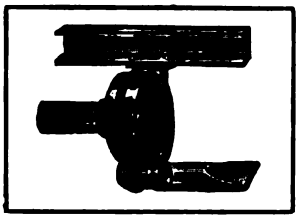

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NUTS and WASHERS, Lock (Continued)

Hold-Tite—See Nutlock Corp.

Holdfast Nut & Bolt Co., 134 S. La Salle St., Chicago, Ill.

Industrial Mfg. Corp., 184 Heard St., Worcester, Mass.

International Harvesting Mfg. Co., 415 Linden St., Scranton, Pa. "Never-Loose." (See page 1205.)

Keystone—See Positive Lock Washer Co.

Mansfield Lock Washer Co., 230 N. Adams St., Mansfield, O.

National Lock Washer Co., 40 Hermon St., Newark, N. J.

National Umbrella Frame Co., 30th & Thompson Sts., Philadelphia, Pa. "Never-Slip." (See page 1135.)

Never Slip—See National Umbrella Frame Co.

Nutlock Corp., 166 Montague St., Brooklyn, N. Y. "Hold-Tite."

O. K. Nut Lock Co.—See Hobbs Mfg. Co.

Palnut Corp., 1400 Niagara St., Buffalo, N. Y.

Positive Lock Washer Co., Newark, N. J. "Keystone." (See page 1061.)

Quadriga Mfg. Co., 213-21 W. Grand Ave., Chicago, Ill.

Reliance Mfg. Co., Massillon, O. (See page 1061.)

Roller Lock Nut Co., 61 Broadway, New York, N. Y.

Safety Nut & Bolt Co., Cleveland, O. "Stevenson."

Sailer & Melvin Mfg. Co., Massillon, O.

Schum Bros., 1 Madison Ave., New York, N. Y.

Selflock Nut & Bolt Co. (E. Syracuse), Syracuse, N. Y.

St. Louis Screw Co., Clarence & Bulwer Aves., St. Louis, Mo.

Shekleton—See Hidalgo Steel Co.

Smith & Hemenway, 180 Coit St., Irvington, N. J.

Stevenson—See Safety Nut & Bolt Co.

Torsion Nut-Lock & Washer Co., 11 Central St., Boston, Mass.

Wire Goods Co., 28 Union St., Worcester, Mass.

NUTS, SPECIAL AIRCRAFT—See Bolts and Nuts, Special Aircraft

NUTS, Thumb or Wing

Atlas Bolt & Screw Co., Cleveland, O. (See page 845.)

Chicago Nut Co., 2513-39 W. 20th St., Chicago, Ill.

Chicago Screw Co., Homan Ave. & Fillmore St., Chicago, Ill. (See pages 837 and 841.)

Clark Bros. Bolt Co., Milldale, Conn.

Cleveland Wrought Products Co., W. 58th St., South of Denison Ave., Cleveland, O. (See page 875.)

Columbus Bolt Works Co., Columbus, O. (See page 155.)

Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.

Haskell Mfg. Co., Wm. H., 24 Commerce St., Pawtucket, R. I.

Keeler Brass Co., 251-71 Godfrey Ave., Grand Rapids, Mich.

Peninsular Milled Screw Co., 6910 E. Lafayette St., Detroit, Mich.

St. Louis Screw Co., Clarence & Bulwer Aves., St. Louis, Mo.

Upson Nut Co., Unionville, Conn.

Western Automatic Machine Screw Co., Elyria, O. (See page 659.)

Worcester Machine Screw Co., 26 Haviland St., Worcester, Mass.

NUTS, WING—See Nuts, Thumb or Wing

ODOMETERS OR DISTANCE METERS—See Meters, Distance Recording

OIL ALARMS—See Alarms, Low Oil

OIL CAN HOLDERS—See Holders, Oil Can; also Holders or Tippers, Oil Can and Barrel

OIL CAN TIPPERS—See Holders or Tippers, Oil Can and Barrel

OIL CANS—See Cans, Oiling

OIL, Castor

A-A—See Baker Castor Oil Co.

Baker Castor Oil Co., 120 Broadway, New York, N. Y. "A-A."

OIL CLARIFIERS—See Separators, Oil

OIL COCK WRENCHES FOR FORDS—See Wrenches, Oil Cock

OIL CUPS—See Cups, Oil and Grease

OIL DEFLECTORS FOR FORDS—See Deflectors, Oil

OIL FILLER PUMPS—See Tanks and Systems, Oil

OIL FILTERS—See Filters, Oil

OIL FUNNELS—See Funnels and Measures, Metal

OIL GAGES FOR FORDS—See Gages, Oil

OIL GUARDS FOR FORDS—See Guards, Oil

OIL GUNS—See Guns, Oil

OIL HOLE COVERS—See Covers, Oil Hole

OIL LAMPS—See Lamps, Oil

OIL MEASURES—See Funnels and Measures, Metal

OIL METERS—See Meters, Gasoline or Oil

OIL PRESSURE GAGES—See Gages, Oil Pressure

OIL PUMPS—See Lubricators

OIL PURIFIERS—See Purifiers, Oil

OIL RETAINING RINGS—See Washers, Felt

OIL SEPARATORS—See Separators, Oil

OIL TEMPERATURE INDICATING METERS—See Meters, Oil Temperature Indicating

OIL TEMPERING—See Treating Heat

OIL TEST COCKS FOR FORDS—See Gages, Oil

OIL TUBE VALVES FOR FORDS—See Valves, Oil Tube

OILERS, CUP—See Cups, Oil and Grease

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S. A. E. CASTELLATED NUTS—S. A. E. CAP SCREWS—S. A. E. SEMI-FIN. NUTS

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OILERS, ENGINE—See Lubricators

OILERS, SPEEDOMETER SHAFT — See Lubricators, Speedometer Shaft

OILERS, SPRING LEAF—See Cups, Spring Leaf Lubricating; also Strips, Spring Leaf Lubricating; also Tools, Spring Leaf Separating

OILERS, SQUIRT—See Cans, Oiling

OILING BOXES—See Cups, Spring Leaf Lubricating

OILS, CUTTING—See Lubricants, Cutting

OILS, CYLINDER—See Oils, Lubricating

OILS, GEAR—See Oils, Lubricating; also Greases

OILS, Lubricating

A-B-C—See Layton Park Oil & Soap Co.

Acheson Products—See Cassidy Co.

Advance—See Lynch, Alonzo K.

Aerul—See Swan & Finch Co.

Albany—See Cook's Sons.

Alexander & Co., H. T., 17 Battery Pl., New York. N. Y. "Grand Prix."

Allegheny—See Roseberg Oil Co.

Alpha—See Cook's Sons.

Amalie—See Sonneborn Sons.

American Oil Co., American Bldg., Baltimore, Md. "Eze-Lube," "Amoco."

American Oil Corp., S. Water St., Jackson, Mich. "Jaxonoil."

Amoco—See American Oil Co.

Anticarbo—See Cincinnati Oil Works Co.

Arco Co., Euclid Ave. & E. 66th St., Cleveland, O.

Aristo—See Union Oil Co. of California.

Atlas—See Swan & Finch Co.

Aurora—See Pigot-Sayre Co.

Autlubo—See Moore Oil Refining Co.

Auto Oil Co., 172 S. Water St., Jackson, Mich.

Autocrat—See Bock & Snelling Co.

Autoline—See Robinson & Son Co.

Balkar—See Jones & Bro.

Balso Oil Co., 238 N. Erie St., Toledo, O.

Banner—See Clarkson & Ford Co.

Baum's Castorine Co., 104 N. George St., Rome, N. Y.

Bayerson Oil Works—See Bock & Snelling Co.

Belden & Co., A. G., 29 Burling Slip, New York, N. Y. "Valvone," "Pycnoleum."

Berry's Sons, Jas. L., 11 Broadway, New York, N. Y.

Bliven & Carrington, 29 Moore St., New York, N. Y. "Champion."

Blue Ribbon—See Sawyer Oil Co.

Bock & Co., Harry E., 717 Bock Bldg., Detroit, Mich. (Sole Distributors for Bayerson Oil Works, Erie, Pa. "Autocrat," "Parolene," "Ruby.") (See page 525.)

Borne, Scrymser Co., 80 South St., New York, N. Y. "Colonial," "Globe."

Bull Dog—See Climax Western Oil Co.

Calypsol—See Swan & Finch Co.

Carbo Oil Co., Cleveland, O.

Carolene—See Valley Oil Co.

Cassidy Co., Inc., Edward A., 23 W. 43d St., New York, N. Y. (Sales Department for Acheson Products, Niagara Falls, N. Y. "Oildag." (See page 87.)

Cincinnati Oil Works Co., 525 Eggleston Ave., Cincinnati, O. "Anticarbo."

Clarkson & Ford Co., 55 Water St., New York, N. Y. "Banner."

Climax Lubricating Co., 218 N. 13th St., Philadelphia, Pa.

Climax Western Oil Co., 2824 Tenth Ave., S., Minneapolis, Minn. "Bull dog."

Colran Mfg. & Supply Co., 118 Maiden Lane, New York, N. Y. "Reliable."

Colonial—See Borne, Scrymser Co.

Colorado Lubricating Co., 1723 Wazee St., Denver, Colo. "Lubrolene."

Columbia Refining Co., 90 West St., New York, N. Y.

Conn-O-Co—See Connecticut Oil Co.

Connecticut Oil Co., 549 S. Leonard St., Waterbury, Conn. "Conn-O-Co."

Cook's Sons, Adam, 708-10 Washington St., New York, N. Y. "Albany," "Alpha."

Crane & Co., L. M., 91 Oliver St., Boston, Mass. "Eureka."

Crawford Co., Wm. J., 9 Wood St., Pittsburgh, Pa.

Crew Levick Co., 111 N. Broad St., Philadelphia, Pa. "Perfection."

Crown—See Swan & Finch Co.

Crown—See Great Western Oil Co.

Crum Mfg. Co., 120 N. Main St., Ottawa, Kans. "No-Squeak."

Crystal Oil & Paint Co., 6500 Detroit Ave., Cleveland, O.

Crystaline—See Kentucky Consumers Oil Co.

Currola—See Curry Bros. Oil Co.

Curry Bros. Oil Co., 253-55 Franklin St., Boston, Mass. "Currola," "Superba," "Unity."

Dearborn Chemical Co., 332 S. Michigan Ave., Chicago, Ill.

Defiance—See Waverly Oil Works Co.

Drake Oil Co., 99 E. Spring St., Titusville, Pa. "Speed-Oil."

Duffy Oil & Grease Co., 505 W. 45th St., New York, N. Y.

Duplex—See Enterprise Oil Co.

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."

Eagle Oil & Supply Co., 45 India St., Boston, Mass. "Eagleine."

Eagleine—See Eagle Oil & Supply Co.

Econo-Lub—See Middle States Oil Co.

Economy—See Street & Co.

Emco—See Emery Mfg. Co.

Emery Mfg. Co., 43 Main St., Bradford, Pa. "Emco."

Emlenton Refining Co., Emlenton, Pa.

En-Ar-Co—See National Refining Co.

Ensign Refining Co., 10703 Quebec Ave., Cleveland, O.

Enterprise Oil Co., 164 Chandler St., Buffalo, N. Y. "Duplex."

Eureka—See Crane & Co.

Excelsior—See Mills Oil Co.

Expert—See Warren Refining & Chemical Co.

Eze-Lube—See American Oil Co.

F. V.—See Wadhams Oil Co.

Faultless—See Hawkeye Oil Co.

Fiske Bros. Refining Co., 24 State St., New York, N. Y. "Lubroleine."

Foco Oil Co., 1135 Liberty St., Franklin, Pa. "Focolene."

Focolene—See Foco Oil Co.

Frank Oil Co., 23 W. Spring St., Titusville, Pa.

Franklin Refining Co., Hancock Blk., Franklin, Pa. "Venco."

French—See Marshall Oil Co.

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Owen Magnetic
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Stanley
Studebaker
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Concord
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Dorris
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Packard
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Seneca
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Sullivan
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Texan
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Chase
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Monarch
National
Parrett
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Standard
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Wisconsin

MOTORCYCLES

Excelsior
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OILS, LUBRICATING (Continued)

G. W.—See Great Western Oil Co.

Galena-Signal Oil Co. of Texas, Carter Bldg., Houston, Tex. "Nyfte."

Gargoyle Mobiloils—See Vacuum Oil Co

Gearese—See Swan & Finch Co.

General Oil Works Co., Traction Bldg., Indianapolis, Ind. "Reliable."

Giant—See Moore Oil Refining Co.

Gibbs-Brown Oil & Gasoline Co., 500-10 S Theresa Ave., St. Louis, Mo "Vortex."

Globe—See Borne-Scrymser Co.

Grand Prix—See Alexander & Co.

Great Western Oil Co., 2355 E. 37th St., Cleveland, O. "Nokarbo," "Crown," "Mogul," "G. W."

Greenslade Oil Co., 455 W. Jefferson Ave., Detroit, Mich.

Gulf Refining Co., Pittsburgh, Pa. "Supreme."

Haggerty Refining Co., 50 South St., New York, N. Y. "Thermo."

Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker."
(See page 227.)

Harris Oil Co., A. W., Providence, R. I.
(See page 665.)

Havoline—See Indian Refining Co.

Hawkeye Oil Co., Miles & Roosevelt Sts., Waterloo, Ia. "Faultless."

Haws, George A., 135 Front St., New York, N. Y. "Panhard."

Hinds & Coon, 124-26 Pearl St., Boston, Mass "Peach."

Hobson Oil Co., 1974 Broadway, New York, N. Y. "Knight."

Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whizoil."

Houghton & Co., E. F., 240 Somerset St., Philadelphia, Pa.

Howard Lubricants Co., 1105 Bedford Ave., Brooklyn, N. Y. "Rome."

I. X. L.—See Kramer Co.

Ideal—See Sheppard, W. S.

Ideal—See Street & Co.

Imperial Oil Co., Merchants Exchange, St. Louis, Mo.

Indian Refining Co., 244 Madison Ave., New York, N. Y. "Havoline."

Invader—See Kellom Co.

Invader Oil Co., 76 Pearl St., New York, N. Y.

Invincible—See Miller's Sons Co.

Jaxonoil—See American Oil Corp.

Jones & Bro., J., 428 Locust St., Philadelphia, Pa. "Balkan."

Kayolene—See Kentucky Consumers Oil Co.

Kellogg & Co., E. H., 243-44 South St., New York, N. Y.

Kellom & Co., Chas. F., 21st & Race Sts., Philadelphia, Pa. "Invader."
(See page 665.)

Kendall Refining Co., Bradford, Pa.

Kentucky Consumers Oil Co., 37th & Bank Sts., Louisville, Ky. "Crystaline," "Kayolene."

Keystone Lubricating Co., 21st & Clearfield Sts., Philadelphia, Pa.

Keystone Oil & Mfg. Co., 111 N. Market St., Chicago, Ill.

Knight—See Hobson Oil Co.

Koolmotor—See Lubric Oil Co.

Kramer Co., W. J., 214-16 Reed St., Milwaukee, Wis. "I. X. L."

Layton Park Oil & Soap Co., M. & M. Bank Bldg., Milwaukee, Wis. "A-B-C."

Liberty Bell Oil Co., 600 S. Vandeventer Ave., St. Louis, Mo.

Liberty—See Richardson Lubricating Co.

Loos & Dilworth, 134 S. Front St., Philadelphia, Pa. "Pioneer."

Lubric Oil Co., Lakeside & Marquette Rd., Cleveland, O. "Koolmotor."

Lubroleine—See Fiske Bros Refining Co.

Lubrolene—See Colorado Lubricating Co.

Lynch, Alonzo K., 310-12 Flushing Ave., Brooklyn, N. Y. "Advance."

McLean-Jones Oil & Supply Co., 40 Court St., Boston, Mass. "Swastika."

Marie Bros., 110-12 S. Clinton St., Chicago, Ill.

Magnolene—See Magnolia Petroleum Co.

Magnolia Petroleum Co., Akard & Main Sts., Dallas, Tex. "Magnolene."

Manhattan Oil Co., 592 Vandalia St., St. Paul, Minn. "Molco."

Marathon—See Transcontinental Oil Co.

Marshall Oil Co., Marshalltown, Ia. "French."

Middle States Oil Co., Engineers Bldg., Cleveland, O. "Econo-Lub."

Miller's Sons Co., A. D., Columbus & Preble Aves., Pittsburgh, Pa. "Invincible."

Mills Oil Co., So. West St., Syracuse, N. Y. "Excelsior."

Milwaukee Lubricants Co., 224 Broadway, Milwaukee, Wis.

Mogul—See Great Western Oil Co.

Molco—See Manhattan Oil Co.

Monamobile—See Monarch Mfg. Co

Monarch Mfg. Co., 11th Ave. & Sixth St., Council Bluffs, Ia. "Monamobile."

Monogram—See New York Lubricating Oil Co

Moon Specialty Co., 169 E. 14th St., Brooklyn, N. Y.

Moore Oil Refining Co., York St. & McLean Ave., Cincinnati, O. "Autlubo," "Giant."

Motorlube—See Tygert Co.

Motul—See Swan & Finch Co.

Murphy's—See Phoenix Oil Co.

Mutual Oil Co., Inter-State Bldg., Kansas City, Mo.

National Oil & Supply Co., 180 Frelinghuysen Ave., Newark, N. J. "Viscos."

National Refining Co., Rose Bldg., Cleveland, O. "En-Ar-Co."

New York Lubricating Oil Co., 116 Broad St., New York, N. Y. "Monogram."

New York & New Jersey Lubricant Co., 401 Broadway, New York, N. Y. "Motorol."

No-Carbon—See Noble Refining Co.

No-Squeak—See Crum Mfg. Co.

Nobetr—See Sawyer Oil Co.

Noble Refining Co., 706 Canal Rd., Cleveland, O. "No-Carbon."

Nokarbo—See Great Western Oil Co.

Nye, Wm. F., New Bedford, Mass.

Nye, Wm. F., New Bedford, Mass. "Nyoil."

Nyfte—See Galena-Signal Oil Co. of Texas.

Nyoil—See Nye, Wm. F.

O'Neil Oil & Paint Co., 297-303 E. Water St., Milwaukee, Wis. "Velvet."

Ohio Cities Gas Co., High & Chestnut Sts., Columbus, O. "Puraline," "Tiolene."

Oil City Oil & Grease Co., Seneca St., Oil City, Pa. "Pennzoil."

Oil & Grease Co. of America, 414 Flushing Ave., Brooklyn, N. Y.

Oildag—See Cassidy Co.

Oilzum—See White & Bagley Co.

Opaline—See Sinclair Refining Co.

Palace—See Tiona Refining Co.

Panama Lubricants Co., 2624 Santa Fe Ave., Los Angeles, Cal.

Panhard Oil Corp., 395 Broadway, New York, N. Y.

Paragon Refining Co., 2935 Front St., Toledo, O. "Petrolene."

Paramount—See Schibling, Frederick.

Parker Refining Co., 1307 W. 11th St., Cleveland, O.

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OILS, Lubricating (Continued)

Parolene—See Bock & Snelling Co.
Pathfinder—See Sweet, Charles F.
Patterson Lubricating Co., 114 Broad St., Boston, Mass.
Penn Petroleum & Supply Co., 1224-30 Washington Ave., Philadelphia, Pa. "Primus."
Pennzoil—See Oil City Oil & Grease Co.
Pennzoil—See Panama Lubricants Co.
Perfection—See Crew Levick Co.
Perfection—See Wood Co.
Perry Oil Co., 372 Central Ave., Pawtucket, R. I.
Petrolene—See Paragon Refining Co.
Petroleum Products Co., 39th St. & B. & O. R. R., Pittsburgh, Pa. "Sound-Proof."
Phinney Bros. Co., Chambers Bldg., Oil City, Pa. "Quaker State."
Phoenix Oil Co., 2554 W. Fifth St., Cleveland, O. "Murphys."
Pigot-Sayre Co., 17 Battery Pl., New York, N. Y. "Aurora."
Pioneer—See Loos & Dilworth.
Polarine—See Standard Oil Co. of N. Y
Powaero—See Power-Oil Co.
Power-Oil Co., St. Louis, Mo. "Powerol," "Powaero," "Powerpull." **(See page 663.)**
Powero—See Tide Water Oil Sales Corp.
Powerol—See Power-Oil Co.
Powerpull—See Power-Oil Co.
Primus—See Penn Petroleum & Supply Co.
Puraline—See Ohio Cities Gas Co.
Pure Oil Co., 1306 First St., S., Minneapolis, Minn. "Puritan."
Pure Oil Co., Fifth & Chestnut Sts., Philadelphia, Pa.
Puritan—See Pure Oil Co.
Puritan Oil & Paint Co., 1213 W. 70th St., Cleveland, O
Pycnoleum—See Belden & Co.
Pyramid Oil Co., 2424 University Ave., Minneapolis, Minn.
Quaker State—See Phinney Bros. Co.
Red "C" Oil Mfg. Co., Keyser Bldg., Baltimore, Md. "Speedway."
Red Line, Inc., Grand Rapids, Mich. **(See page 1047.)**
Regal—See Stevenson Bro. & Co.
Reliable—See Colgan Mfg. & Supply Co.
Reliable—See General Oil Works Co.
Reynoil—See Reynolds Oil & Grease Co.
Reynolds Oil & Grease Co., 122 Oliver St., Boston, Mass. "Reynoil."
Richardson Lubricating Co., Front & Maine Sts., Quincy, Ill. "Liberty."
Rie-Nie—See Durkee-Atwood Co.
Robertson Lubricants Co., 21st & Race Sts., Philadelphia. **(See page 665.)**
Robinson & Son Co., Wm. C., 32 South St., Baltimore, Md. "Autoline."
Rome—See Howard Lubricants Co.
Roseberg Oil Co., 923 Santa Fe Ave., Los Angeles, Cal. "Allegheny."
Royal Petroleum Co., 204 E. 74th St., New York, N. Y.
Ruby—See Street & Co.
Ruby—See Bock & Snelling Co.
Sawyer Oil Co., Howard B., 62 Long Wharf, Boston, Mass. "Blue Ribbon," "Nobetr."
Schibling, Frederick, 617 Greenwich St., New York, N. Y. "Paramount."
Shappell Petroleum Products Co., N. West St. Rd., Lima, O.
Sheppard, W. S., 21 Lawrence St., Newark, N. J. "Ideal."
Sinclair Refining Co., Chicago, Ill. "Opaline," "Sinco." **(See page 665.)**
Sinco—See Sinclair Refining Co.
Sloane & Zook, 101 Main St., Bradford, Pa.
Snow Flake Axle Grease Co., 123 Oliver St., Fitchburg, Mass.
Sonneborn Sons, L., 262 Pearl St., New York, N. Y. "Amalie."
Sound-Proof—See Petroleum Products Co.
Speare's Sons Co., Alden, 140 Sixth St., Boston, Mass.
Speed Oil—See Drake Oil Co.
Speedway—See Red "C" Oil Mfg. Co.
Spoco Oil Co., 818 Larimer St., Denver, Colo.
Standard Oil Co. of N. Y., 26 Broadway, New York, N. Y. "Polarine," "Zerolene."
Sterling Oil Corp., 608 Swan St., Buffalo, N. Y. "X-Tra."
Stevenson Bro. & Co., 110 Race St., Philadelphia, Pa. "Regal."
Stock Xylite Grease & Oil Co., G. B., 619 Water St., Port Huron, Mich. "Xylite."
Street & Co., J. D., 41st St. & Park Ave., St. Louis Mo. "Ideal," "Ruby," "Economy."
Sullivan Oil Co., 418 N. Wells St., Chicago, Ill.
Sun Co., Finance Bldg., Philadelphia, Pa. "Sunoco."
Sunoco—See Sun Co.
Suor Oil Products Corp., 1-7 Howell St., Buffalo, N. Y. "Surco."
Superba—See Curry Bros. Oil Co.
Superior Oil Co., 1426 W. Third St., Cleveland, Ohio.
Supreme—See Gulf Refining Co.
Surco—See Suor Oil Products Corp.
Sutherland & Co., P., 232 Milk St., Boston, Mass. "Velvet."
Swan & Co., Alden S., 185 Front St., New York, N. Y. "Swanoleine."
Swan & Finch Co., 165 Broadway, New York, N. Y. "Atlas," "Crown," "Motul," "Gearese," "Aerul," "Calypsol."
Swanoleine—See Swan & Co.
Swastika—See McLean-Jones Oil & Supply Co.
Sweet, Charles F., 247 State St., Hartford, Conn. "Pathfinder."
Syco—See Symonds Co.
Symond Co., Joseph H., Westfield, Mass. "Syco."
Texaco—See Texas Co.
Texas Co., 17 Battery Pl., New York, N. Y. "Texaco."
Thermo—See Haggerty Refining Co.
Three-In-One Oil Co., 165 Broadway, New York, N. Y.
Tide Water Oil Sales Corp., 11 Broadway, New York, N. Y. "Veedol," "Powero." **(See page 667.)**
Tiolene—See Ohio Cities Gas Co.
Tiona Refining Co., Madison Ave. & Belt Ry., Indianapolis, Ind. "Palace."
Transcontinental Oil Co., Benedum-Trees Bldg., Pittsburgh, Pa. "Marathon."
Tygert Co., E. A., 126 N. Front St., Philadelphia, Pa. "Motorlube."
Underhay Oil Co., 276 Franklin St., Boston, Mass.
Union Oil Co. of California, Union Oil Bldg., Los Angeles, Cal. "Aristo."
Union Petroleum Co., Widener Bldg., Philadelphia, Pa.
Unity—See Curry Bros. Oil Co.
Vacuum Oil Co., 61 Broadway, New York, N. Y. "Gargoyle Mobiloils."
Valley Oil Co., Century Bldg., Cleveland, O. "Carolene."
Valvoline Oil Co., 11 Broadway, New York, N. Y.
Valvone—See Belden & Co.
Veedol—See Tide Water Oil Sales Corp.
Velvet—See O'Neil Oil & Paint Co.
Velvet—See Sutherland & Co.

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OILS, Lubricating (Continued)

Venco—See Franklin Refining Co.
Ventura Refining Co., 458 S. Spring St., Los Angeles, Cal.
Visco Motor Oil Co., 2104 Superior Ave., N. W., Cleveland, O.
Viscomotor—See Viscosity Oil Co.
Viscos—See National Oil & Supply Co.
Viscosity Oil Co., 1101-03 W. 37th St., Chicago, Ill. "Viscomotor."
Vortex—See Gibbs-Brown Oil & Gasoline Co.
Wadhams Oil Co., 359 Clinton St., Milwaukee, Wis. "F. V."
Warren Refining & Chemical Co., Cleveland, O. "Expert."
Waverly Oil Works Co., Pittsburgh, Pa. "Defiance." (See page 663.)
Whale—See Nye, Wm. F.
White & Bagley Co., Worcester, Mass. "Oilsum." (See page 663.)
Whizoil—See Hollingshead Co
Willhelm Oil Co., 2361 Hampden Ave., St. Paul, Minn. "Willoco."
Willoco—See Willhelm Oil Co.
Winn, Wm. R., 143 Maiden Lane, New York, N. Y.
Winne, Howard B., 714 W. Jackson Blvd., Chicago, Ill.
Wolf's Head—See Wolverine Lubricants Co.
Wolverine Lubricants Co., 44 Whitehall St., New York, N. Y. "Wolf's Head." (See page 663.)
Wonder Worker—See Hall-Thompson Co.
Wood Co., W. A., 373 Atlantic Ave., Boston, Mass. "Perfection."
X-Tra—See Sterling Oil Corp.
Xylite—See Stock Xylite Grease & Oil Co.
Youkim—See Young Co.
Young Co., Frank L., 111 Purchase St., Boston, Mass. "Youkim."
Zerolene—See Standard Oil Co. of N. Y.
Zone Oil Co., W. 11th St., Cleveland, O.
Zurn Co., O. F., 2736-38 N. Broad St., Philadelphia, Pa. "Zurnoil."
Zurnoil—See Zurn Co.

OILS, NON-FLUID—See Greases, Cup and Gear

OLDHAM COUPLINGS—See Couplings, Magneto and Generator

ONE-MAN TOPS—See Tops

OPEN END WRENCHES—See Wrenches, Nut and Bolt

OPENERS, Curtain

(A device to be attached to doors of open cars so that storm curtains may be opened with the doors)

Blackmore, Charles C., Dayton, O. (See page 667.)
Ervien, Horace, Ogonts, Pa.
Holcker-Elberg Mfg. Co., 16th & McGee Sts., Kansas City, Mo.
Jitney Curtain Co., 30 N. Ludlow St., Dayton, O.
Kelly & Towers, 1618 Walnut Ave., Cleveland, O. "Towers."
Midway Mechanical Co., St. Paul, Minn. "U-Fit-it." (See page 667.)
Scott Co., Geo. W., 1831 E. 55th St., Cleveland, O.
Sterling Top & Equipment Co., 513-23 W. 57th St., New York, N. Y.
Towers—See Kelly & Towers.
U-Fit-it—See Midway Mechanical Co.

OPENERS, Curtain, for Fords

(A device to be attached to doors of open cars so that storm curtains may be opened with the doors)

Blackmore, Charles C., Dayton, O. (See page 667.)

OPENERS, Electric and Pneumatic Garage Door

(For manually operated openers—See Holders and Openers, Garage Doors.)

Allith-Prouty Co., Danville, Ill. (See page 525.)
Doan & Co., Howard E., Joliet, Ill.
Foss-Hughes Co., 21st & Market Sts., Philadelphia, Pa.
Lindberg Co., J. F., 501 N. La Salle St., Chicago, Ill.
Lovejoy Automatic Door Opener Co., 412-14 Second St., Laramie, Wyo.
Miller & Son Co., Geo. B., Waterloo, Iowa. "Perkins."
Peerless Door Control Co., 506 S. Wabash Ave., Chicago, Ill.
Perkins—See Miller & Son Co.
R. W. Stewart—See Richards-Wilcox Mfg. Co.
Richards-Wilcox Mfg. Co., Third St. & C. B. & Q. R. R. Tracks, Aurora, Ill. "R. W. Stewart."

OPENERS, GARAGE DOOR—See Openers, Electric and Pneumatic Garage Door

OPENERS, PET COCK, FOR FORDS—See Wrenches, Oil Cock

OPENERS, PNEUMATIC GARAGE DOOR—See Openers, Electric and Pneumatic Garage Door

ORNAMENTS, Radiator

(For Flag Ornaments—See Flags; also Holders, Flag; for Metal Monograms—See Monograms, Ornamental)

Aetna Brass & Bronze Co., 1631-35 E. 55th St., Cleveland, O.
Allen Pin Co., 101 Sabin St., Providence, R. I
Arkay—See Riley-Klotz Mfg. Co.
Art Metal Works, Aronson Sq., Newark, N. J. "Moto-Fan," "Ronson." (See page 503.)
Ashland Products Co., 50 E. Ninth St., Ashland, O. "Victory." (See page 539.)
Cramp & Sons Ship & Engine Building Co., William, Philadelphia, Pa. (See page 209.)
Dalkranian Co., J. K., 412 Hill St., West Hoboken, N. J. "Metroplane."
General Etching & Mfg. Co., 312 S. Hamilton Ave., Chicago, Ill.
Johnson & Seckendorf, 9 W. 45th St., New York, N. Y.
Metalware Corp., 141 W. Austin Ave., Chicago, Ill.
Metroplane—See Dalkranian Co.
Moto-Fan—See Art Metal Works.
Pierrot Novelty Co., Merchants Bank Bldg., Indianapolis, Ind.
Reiberger Mfg. Co., 548 Webster Ave., Chicago, Ill.
Riley-Klotz Mfg. Co., 17 Mulberry St., Newark, N. J. "Arkay."
Robbins & Myers Co., Springfield, O.
Ronson—See Art Metal Works.
Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) (See page 301.)
Stevens & Co., 375 Broadway, New York, N. Y. (See page 1147.)
Victory—See Ashland Products Co.

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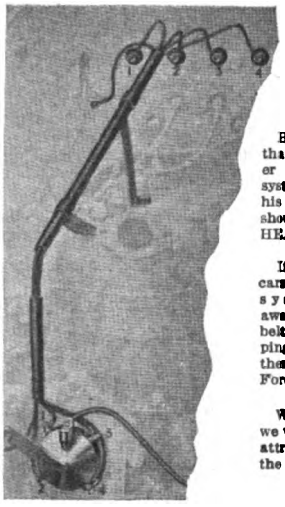
"OVERHEAD"

WIRING ASSEMBLY FOR FORD CARS



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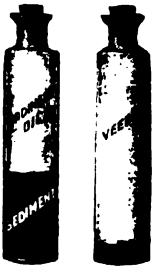

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ORNAMENTS, TRANSFER—See Transfers, Decalcomania

ORPHAN CAR PARTS—See Parts, Repair

OUTBOARD MOTORS, MOTOR BOAT—See Engines, Motor Boat Outboard

OVERALLS—See Clothing, Motorists

OVERHEAD VALVE SILENCERS—See Silencers, Overhead Valve

OXY-ACETYLENE WELDERS CLAMPS—See Clamps, Oxy-Acetylene Welders

OXY-ACETYLENE WELDING—See Welding, Autogenous

OXY-ACETYLENE WELDING MACHINES—See Machines, Autogenous Welding

OXYGEN APPARATUS—See Apparatus, Aircraft Oxygen

OXYGEN CYLINDER CLEANING APPARATUS—See Machines, Engine Decarbonizing

OXYGEN TANK TRUCKS—See Trucks, Acetylene and Oxygen Tank

OXYGEN TANKS—See Tanks, Oxygen

PACKING, Asbestos and Fibrous

A-B-C—See American Brake-Lining Co.

Adpasco—See Advance Packing & Supply Co.

Advance Packing & Supply Co., 80 E. Lake St., Chicago, Ill. "Bestalline," "Tenax," "Endura," "Adpasco." (See page 669.)

Alltex Weaving & Specialty Co., 212 Broadway, New York, N. Y. (See page 667.)

Ambler—See Keasbey & Mattison Co.

American Brake-Lining Co., Lansdale, Pa. "A-B-C." (See page 669.)

American Mills Co., 39 W. 19th St., New York, N. Y. (See page 599.)

Anchor Packing Co., 72 Murray St., New York, N. Y. "Ankorite," "Hydroil," "Tauril." (See page 669.)

Ankorite—See Anchor Packing Co.

Asbestos & Rubber Works of America, 1821 Broadway, New York, N. Y. "Motobestos." (See page 645.)

Bestalline—See Advance Packing & Supply Co.

Burgin & Co., 487 Broadway, New York, N. Y. "Likehyd."

Calibestos—See General Asbestos & Rubber Co.

Crandall Packing Co., Palmyra, N. Y.

Demon—See Hart Packing Co.

Dominion Asbestos & Rubber Corp., 154 Nassau St., New York, N. Y. (See page 575.)

Dugas-Hundley Corp., 29 W. 34th St., New York, N. Y. "Reliance."

Durabestos—See United Asbestos & Packing Co.

Duraco—See United Asbestos & Packing Co.

Empire Rubber & Tire Co., Mulberry St. & Clinton Ave., Trenton, N. J. "Motobestos."

Empire Weaving & Belting Corp., East Rochester, N. Y. "Tuftex."

Endura—See Advance Packing & Supply Co.

Endura Mfg. Co., 6317 Eastwick Ave., Philadelphia, Pa.

Essex Rubber Co., May & Beakes Sts., Trenton, N. J.

Fibre Finishing Co., 73 Fremont St., Boston, Mass. "Vellumoid."

Garlock Packing Co., Palmyra, N. Y.

Gasket Supply Co., 1728 Ludlow St., Philadelphia, Pa. (See page 447.)

General Asbestos & Rubber Co., Charleston, S. C. "Calibestos." (See Back Cover.)

Goodyear Tire & Rubber Co., Akron, O. (See page 1015.)

Hart Packing Co., 144 High St., Boston, Mass "Demon."

Hydroil—See Anchor Packing Co.

J. M. Mogul—See Johns-Manville Co.

Johns-Manville Co., H. W., Madison Ave. & 41st St., New York, N. Y. "J. M. Mogul."

Keasbey & Mattison Co., Butler Ave., Ambler, Pa. "Ambler."

Knowlton Rubber Co., Geo. W., 60 Pearl St., Boston, Mass.

Likehyd—See Burgin & Co.

Luxoid—See Thermoid Rubber Co.

Mibroco—See Mikesell Bros. Co.

Mikesell Bros. Co., 176-78 N. La Salle St., Chicago, Ill. "Mibroco," "Ronuk," "Wabash." (See page 297.)

Motobestos—See Asbestos & Rubber Works of America.

Motobestos—See Empire Rubber & Tire Co.

Reliance—See Dugas-Hundley Corp.

Ronuk—See Mikesell Bros. Co.

Springbestos—See Springman Paper Products Co.

Springman Paper Products Co., Detroit, Mich. "Springbestos," "Springrite." (See page 877.)

Springrite—See Springman Paper Products Co.

Staybestos Mfg. Co., 5534 Lena St. (Germantown), Philadelphia, Pa.

Tauril—See Anchor Packing Co.

Tenax—See Advance Packing & Supply Co.

Thermoid Rubber Co., Trenton, N. J. "Luxoid." (See page 543.)

Tuftex—See Empire Weaving & Belting Corp.

United Asbestos & Packing Co., 629 Washington Blvd., Chicago, Ill. "Duraco," "Durabestos."

Vellumoid—See Fibre Finishing Co.

Wabash—See Mikesell Bros. Co.

Wearwell Gasket & Packing Co., Camden, N. J. (See page 673.)

PACKING, FIBROUS—See Packing, Asbestos

PACKING, METALLIC—See Gaskets, Metallic

PACKING, Rubber

Boston Belting Co., 34 Linden Park St., Boston, Mass.

Bowers Rubber Works, 68-70 Sacramento St., San Francisco, Cal.

Cincinnati Rubber Mfg. Co., Cincinnati, O. "Royal," "Sandow," "Wampus," "Old Crow." (See page 523.)

Crandall Packing Co., Palmyra, N. Y.

Dugas-Hundley Corp., 29 W. 34th St., New York, N. Y. "Reliance."

Firo—See New York Belting & Packing Co.

Garlock Packing Co., Palmyra, N. Y.

Goodyear Tire & Rubber Co., Akron, O. (See page 1015.)

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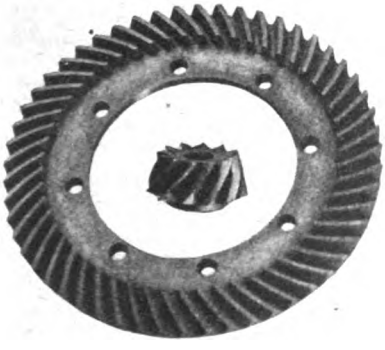

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PACKING, Rubber (Continued)

Hamilton Rubber Mfg. Co., Mead & Prince Sts., Trenton, N. J.
Hart Packing Co., 144 High St., Boston, Mass.
Home Tire Co., Trenton, N. J.
Knowlton Rubber Co., Geo. W., 60 Pearl St., Boston, Mass.
Manhattan Rubber Mfg. Co., Willett St., Passaic, N. J.
National India Rubber Co., Bristol, R. I.
New York Belting & Packing Co., 91 Chambers St., New York, N. Y. "Firo."
Old Crow—See Cincinnati Rubber Mfg. Co.
Quaker City Rubber Co., 629 Market St., Philadelphia, Pa.
Reliance—See Dugas-Hundley Corp.
Royal—See Cincinnati Rubber Mfg. Co.
Sandow—See Cincinnati Rubber Mfg. Co.
United States Rubber Co., 1790 Broadway, New York, N. Y.
Voorhees Rubber Mfg. Co., 20-56 Bostwick Ave., Jersey City, N. J.
Wampus—See Cincinnati Rubber Mfg. Co.

PADDING, BODY—See Lining, Body or Frame

PADDING, FRAME—See Lining, Body or Frame

PADLOCKS—See Locks, Cabinet and Pad

PADS, GRIP—See Protectors, Door

PADS, LICENSE—See Numbers, License

PADS, PEDAL—See Grips, Pedal

PAILS, FOLDING—See Buckets, Collapsible

PAINT BRUSHES—See Brushes, Paint

PAINT DRYING ROOMS—See Rooms, Paint and Varnish Drying

PAINT FILLERS—See Fillers, Paint

PAINT REMOVERS—See Removers, Paint, Enamel and Varnish

PAINTS, Aluminum and Bronze

Alustrium—See Devoe & C. T. Raynolds Co.
Anchor—See Bronze Powder Works Co.
Arnold, N. B., 1 Sigourney St., Brooklyn, N. Y. "Slikup."
Baer Bros., 433-43 W. 37th St., New York, N. Y.
Benoit, Constant A., Brooklyn, N. Y. "Permatex." (See page 225.)
Bilchaco—See Billings-Chapin Co.
Billings-Chapin Co., 1163 E. 40th St., Cleveland, O. "Bilchaco."
Binswanger & Co., B., 115 N. Fourth St., Philadelphia, Pa.
Blood & Co., T. L., 413 Wacouta St., St. Paul, Minn.
Bronze Powder Works Co., 801 Magnolia Ave., Elizabeth, N. J. "Anchor," "Vulcan."
Devoe & C. T. Raynolds Co., F. W., 101 Fulton St., New York, N. Y. "Alustrium."
du Pont de Nemours & Co., E. I., Wilmington, Del. (See page 223.)
Dutch—See Van Cleef Bros.
Gerstendorfer Bros., 231 E. 42d St., New York, N. Y. "Sapolin."
Jewel—See Wadsworth-Howell & Co.
N. Y.
Kemp Co., W. H., 1737 Broadway, New York.
Mentauk Paint Mfg. Co., 170-72 Second Ave., Brooklyn, N. Y.
Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 277.)
Norwesco—See Northwestern Chemical Co.
Permatex—See Benoit, Constant A.
Sapolin—See Gerstendorfer Bros.
Schlegel Mfg. Co., Oscar, 124 E. 13th St., New York, N. Y.
Slikup—See Arnold, N. B.
Uhlfelder Co., Leo, 130-32 W. 29th St., New York, N. Y.
Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."
Vulcan—See Bronze Powder Works Co.
Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."

PAINTS, BRONZE—See Paints, Aluminum

PAINTS, CYLINDER—See Paints, Exhaust Pipe

PAINTS, Enamel

Acme White Lead & Color Works, 8250 St. Aubin Ave., Detroit, Mich.
Ad-El-Ite—See Adams & Elting Co.
Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite." (See page 267.)
Akron Varnish Co., Akron, O. "Imperial."
American Paint Products Co., 738 S. Wabash Ave., Chicago, Ill.
Armitage & Co., John L., Newark, N. J. "Armorcote."
Armorcote—See Armitage & Co.
Ault & Wiborg Co., New, Seventh & Culvert Sts., Cincinnati, O.
Auto Products Mfg. Co., Buffalo, N. Y. "Cov-R-Mar." (See page 225.)
Autonamel Co., 94-97 St. Paul St., Rochester, N. Y.
Bay State—See Wadsworth, Howland & Co.
Benoit, Constant A., Brooklyn, N. Y. "Permatex Auto Lac." (See page 225.)
Berry Bros., 211 Lieb St., Detroit, Mich.
Bilchaco—See Billings-Chapin Co.
Billings-Chapin Co., 1163 E. 40th St., Cleveland, O. "Bilchaco."
Bird & Co., J. A. & W., 88 Pearl St., Boston, Mass. (Importers.) "Ripolin."
Bissell Varnish Co., 277 Mountain Grove St., Bridgeport, Conn. "Crocketts."
Blaxshine—See Twin City Varnish Co.
Boyer Chemical Co., 13 E. Kinzie St., Chicago, Ill.
Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.
Cleveland Varnish Co., Cleveland, O. (See page 1041.)
Columbus Varnish Co., Columbus, O. "Peerless." (See page 365.)
Cov-R-Mar—See Auto Products Mfg. Co.
Crocketts—See Bissell Varnish Co.
Detroit White Lead Works, 1960 Milwaukee Ave., E., Detroit, Mich.
Devoe & C. T. Raynolds Co., F. W., 101 Fulton St., New York, N. Y.
Eberson-Lindsley Paint Co., 1830-32 Morgan St., St. Louis, Mo.
Effecto—See Pratt & Lambert.
Felton, Sibley & Co., 136-40 N. Fourth St., Philadelphia, Pa.

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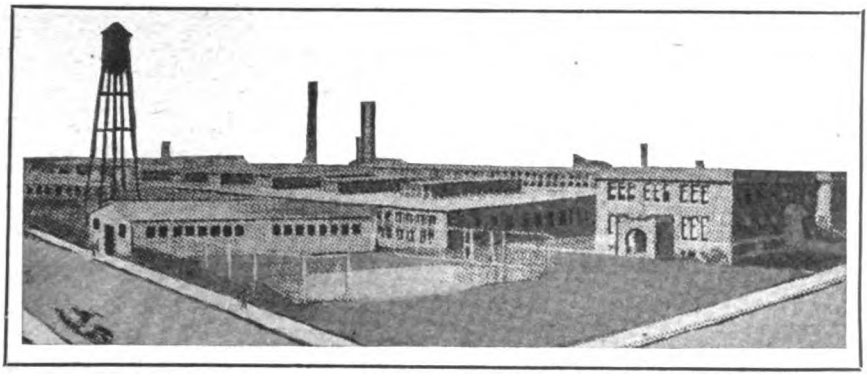

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PAINTS, Enamel (Continued)

Flint Varnish & Color Works, Hamilton & St. Johns Sts., Flint, Mich.

Forest City Paint & Varnish Co., 3334 Lakeside Ave., Cleveland, O.

Glidden Co., W. Madison Ave. & L. S. & M. S. Ry., Cleveland, O. "Royal."

Hanline Bros., 23-25 Howard St., Baltimore, Md.

Hilo Varnish Corp., Marcy & Flushing Aves., Brooklyn, N. Y.

I. C. U.—See Livingston Co.

Imperial—See Akron Varnish Co.

Johnston Paint Co., R. F., Pearl & Main Sts., Cincinnati, O.

Koppak—See Koppers Products Co.

Koppers Products Co., 356 Union Arcade, Pittsburgh, Pa. "Koppak."

Liberty Chemical Works, 352 E. Illinois St., Chicago, Ill.

Livingston Co., 161 Day St., New Haven, Conn. "I. C. U."

McDougall-Butler Co., 6 Evans St., Buffalo, N. Y.

Martin-Senour Co., 2510 Quarry St., Chicago, Ill.

Masury & Son, John W., 44-50 Jay St., Brooklyn, N. Y.

Mengo Products Co., 537 Rosedale St. (Wilkinsburg), Pittsburgh, Pa.

Mirrolike Mfg. Co., 203 Eighth St., Long Island City, N. Y.

Montauk Paint Mfg. Co., 170-72 Second Ave., Brooklyn, N. Y.

Once-Over—See Torkelson Mfg. Co.

Peerless—See Columbus Varnish Co.

Permatex Auto Lac—See Benoit, Constant A.

Pratt & Lambert, 79 Tonawanda St., Buffalo, N. Y. "Effecto."

Quickwork—See Standard Varnish Works.

Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.

Ripolin—See Bird & Co.

Royal—See Glidden Co.

Royalcote—See Wilhelm Co.

Sherwin-Williams Co., 100 Canal St., Cleveland, O.

So-E-Zy—See Watson Paint & Glass Co.

Standard Varnish Works, 90 West St., New York, N. Y. "Quickwork."

Torkelson Mfg. Co., 414 Selby Ave., St. Paul, Minn. "Once-Over."

Tousey Varnish Co., 520 W. 25th St., Chicago, Ill.

Twin City Varnish Co., 208 N. Wabash Ave., Chicago, Ill. "Blaxshine."

Valentine & Co., 456 Fourth Ave., New York, N. Y.

Wadsworth, Howland & Co., 141 Federal St., Boston, Mass. "Bay State."

Watson Paint & Glass Co., McKeesport, Pa. "So-E-Zy."

Wilhelm Co., A., Third & Bern Sts. Division, Reading, Pa. "Royalcote."

Won Kote Enamel Co., 16 N. Brook St., Geneva, N. Y.

PAINTS, Exhaust Pipe, Muffler and Cylinder

Arnold, N. B., 1 Sigourney St., Brooklyn, N. Y. "Slikup."

Arnstein, Eugene, 45 W. 26th St., Chicago, Ill. "Century."

Auto Products Mfg. Co., Buffalo, N. Y. "Nev-R-Chip." **(See page 225.)**

Benoit, Constant A., Brooklyn, N. Y. "Permatex." **(See page 225.)**

Bulger Varnish Co., William, 3058 E. 87th St., Cleveland, O.

Century—See Arnstein, Eugene.

Columbus Varnish Co., Columbus, O. "Peerless." **(See page 365.)**

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."

Dutch—See Van Cleef Bros.

Eberson-Lindsley Paint Co., 1830-32 Morgan St., St. Louis, Mo.

E-Fec-Tiv—See Permatite Mfg. Co.

Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker." **(See page 227.)**

Hilo Varnish Corp., Marcy & Flushing Aves., Brooklyn, N. Y.

Mirrolike Mfg. Co., 203 Eighth St., Long Island City, N. Y.

Moore & Co., Benjamin, 231-33 Front St., Brooklyn, N. Y.

Nev-R-Chip—See Auto Products Mfg. Co.

Never-Burn—See Northwestern Chemical Co.

Northwestern Chemical Co., 785 State St., Marietta, O. "Never-Burn." **(See page 277.)**

Nu-Back Mfg. Co., 213-15 S. Second St., St. Louis, Mo.

Peerless—See Columbus Varnish Co.

Permatex—See Benoit, Constant A.

Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."

Puritan Soap Co., 500 Exchange St., Rochester, N. Y.

Rie-Nie—See Durkee-Atwood Co.

Slikup—See Arnold, N. B.

Stowell, E. R., Oden, Mich.

Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."

Wonder Worker—See Hall-Thompson Co.

Wilhelm Co., A., Third & Bern Sts., Reading Pa. "Royal."

PAINTS, Luminous

(For illuminating clock, meter or gage dials; for concerns who apply the compound—See Dials, Luminous)

Cold Light Mfg. Co., 50 Union Sq., New York, N. Y. "Marvelite."

Cummings Chemical Co., W.L. (Lansdowne), Philadelphia, Pa.

Luma—See Radium Chemical Co.

Marvelite—See Cold Light Mfg. Co.

Radium Chemical Co., Forbes & Meyran Aves., Pittsburgh, Pa. "Luma."

PAINTS, MUFFLER—See Paints, Exhaust Pipe

PAINTS, PHOSPHORESCENT—See Paints, Luminous

PAINTS, Rim

(See also Paints, Aluminum and Bronze; also Paints, Enamel)

Ad-el-ite—See Adams & Elting Co.

Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite." **(See page 267.)**

Arnold, N. B., 1 Sigourney St., Brooklyn, N. Y. "Slikup."

Be-Be-Co—See Boston Blacking Co.

Beardslee, J. W., Elmira, N. Y.

Boston Blacking Co., Third & Potter Sts., Cambridge, Mass. "Be-Be-Co."

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PAINTS, Rim (Continued)

Columbus Varnish Co., Columbus, O. "Peerless." (See page 365.)

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."

E-Fec-Tiv—See Permatite Mfg. Co.

Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker," "Rim Kote." (See page 227.)

Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whiz."

Jewel—See Wadsworth-Howland Co.

Martin-Senour Co., 2510 Quarry St., Chicago, Ill.

Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 277.)

Norwesco—See Northwestern Chemical Co.

Peerless—See Columbus Varnish Co.

Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."

Puritan Soap Co., 500 Exchange St., Rochester, N. Y..

Rie-Nie—See Durkee-Atwood Co.

Rim Kote—See Hall-Thompson Co.

Slikup—See Arnold, N. B.

Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."

Whiz—See Hollingshead Co.

Wonder Worker—See Hall-Thompson Co.

PAINTS, Rubber

(For refinishing rubber mats and matting and painting tires)

Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Tire-ite." (See page 267.)

Arnold, N. B., 1 Sigourney St., Brooklyn, N. Y. "Slikup."

Arnstein, Eugene, 45 W. 26th St., Chicago, Ill. "Century."

Atlas Auto Supply Co., 697 W. Austin Ave., Chicago, Ill. "Preservo." (See page 273.)

Be-Be-Co.—See Boston Blacking Co.

Boston Blacking Co., Third & Potter Sts., Cambridge, Mass. "Be-Be-Co."

Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.

Bradley & Vrooman Co., 2629 Dearborn St., Chicago, Ill. "Velvet."

Cassidy Co., Inc., Edward A., 23 W. 43d St., New York, N. Y. (Sole Distributors for Sterling Varnish Co., Pittsburgh, Pa. "Nitrex.") (See page 87.)

Century—See Arnstein, Eugene.

Columbus Varnish Co., Columbus, O. "Peerless." (See page 365.)

Cook, Geo. E., 2322 Broadway, New York, N. Y.

Detroit White Lead Works, 1960 Milwaukee Ave., E., Detroit, Mich. "Rogers."

Dol-Em-Up—See Western Vulcanizer Mfg. Co.

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie Tyre Re-Nu."

Dutch—See Van Cleef Bros.

E-Fec-Tiv—See Permatite Mfg. Co.

French & Co., Samuel H., York Ave., Fourth & Callowhill Sts., Philadelphia, Pa.

Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker." (See page 227.)

Henry's—See Perfectfix Rubber Co.

Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whiz."

I. C. U.—See Livingston Co.

Jewel—See Wadsworth-Howland Co.

Livingston Co., 161 Day St., New Haven, Conn. "I. C. U."

McDougall-Butler Co., 6 Evans St., Buffalo, N. Y.

Mirrolike Mfg. Co., 208 Eighth St., Long Island City, N. Y.

Nitrex—See Cassidy Co.

Northwestern Chemical Co., 785 State St., Marietta, O. "Tire-Lac." (See page 277.)

Nu-Back Mfg. Co., 213-15 S. Second St., St. Louis, Mo. "Rub-ber-Nu."

Peerless—See Columbus Varnish Co.

Perfectfix Rubber Co., Greenbay Rd., Milwaukee, Wis. "Henry's."

Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."

Preservo—See Atlas Auto Supply Co.

Puritan Soap Co., 500 Exchange St., Rochester, N. Y. "Tyrkote."

Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.

Rie-Nie Tyre-Re-Nu—See Durkee-Atwood Co

Rogers—See Detroit White Lead Works.

Rub-Ber-Nu—See Nu-Back Mfg. Co.

Slikup—See Arnold, N. B.

Sterling Varnish Co.—See Cassidy Co.

Tire-ite—See Adams & Elting Co.

Tire-Lac—See Northwestern Chemical Co.

Tyrkote—See Puritan Soap Co.

Velvet—See Bradley & Vrooman Co.

Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."

Western Vulcanizer Mfg. Co., 150 N. Desplaines St., Chicago, Ill. "Dol-Em-Up."

Whiz—See Hollingshead Co.

Wonder Worker—See Hall-Thompson Co

PAINTS, TIRE—See Paints, Rubber

PAINTS and COLORS

Acme White Lead & Color Works, 8250 St. Aubin Ave., Detroit, Mich.

Ault & Wiborg Co., New, Seventh & Culvert Sts., Cincinnati, O.

Bay State—See Wadsworth, Howland & Co.

Billings-Chapin Co., 1163 E. 40th St., Cleveland, O. "Oughto."

Bissell Varnish Co., 277 Mountain Grove St., Bridgeport, Conn. "Crocketts."

Buckeye Paint & Varnish Co., 15th & Lucas Sts., Toledo, O.

Bulls-Eye—See Zinsser & Co.

Capitol City—See Indianapolis Paint & Color Co.

Chicago White Lead & Oil Co., 1454 S. Western Ave., Chicago, Ill. "King."

Cincinnati Varnish Co., 211 South St., Cincinnati, O.

Columbus Varnish Co., Columbus, O. (See page 365.)

Crockett—See Bissell Varnish Co.

Detroit White Lead Works, 1960 Milwaukee Ave., E., Detroit, Mich.

Devoe & C. T. Raynolds Co., F. W., 101 Fulton St., New York, N. Y.

Dibble Color Co., 445 Larned St. W., Detroit, Mich.

Ditzler Color Co., 40 W. Baltimore Ave., Detroit, Mich.

du Pont de Nemours & Co., E. I., Wilmington, Del. "Flint." (See page 223.)

Felton, Sibley & Co., 136-40 N. Fourth St., Philadelphia, Pa.

Fix-A-Mar—See Panvar Co.

Flint—See du Pont de Nemours Co.

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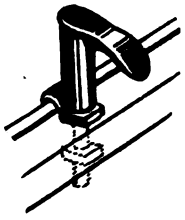

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Nickel Finish $2.50
Black Finish 2.25

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The Davey Spring Hood Clip for Ford Cars will take all that rattle out of your engine hood also improve the appearance—no holes to drill or alterations to make and no trouble to install.

Patented and Manufactured by

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"CORK STUDDED"

FOR FORD CARS

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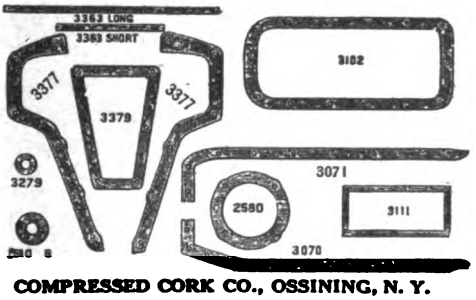
Cork Gaskets for all other makes of cars



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BRADFORD FABRICS COMPANY

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1753 - 55 Broadway NEW YORK CITY

Manufacturers and Importers of

SEALTEX Fabrics

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Limousines, Sedans, Coupes, Touring Cars, Trucks and Aeroplanes

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PAINTS and Colors (Continued)

Flint Varnish & Color Works, Hamilton & St. Johns Sts., Flint, Mich.

Forest City Paint & Varnish Co., 3334 Lakeside Ave., Cleveland, O.

French & Co., Samuel H., York Ave., Fourth & Callowhill Sts., Philadelphia, Pa.

Glidden Co., W. Madison Ave. & L. S. & M. S. Ry., Cleveland, O.

Graves Co., N. Z., 22-26 S. Third St., Philadelphia, Pa.

Hanline Bros., 23-25 Howard St., Baltimore, Md.

Harrison Works, 3523 Grays Ferry Rd., Philadelphia, Pa.

Heath & Milligan Mfg. Co., 1333 Seward St., Chicago, Ill.

High Standard—See Lowe Bros. Co.

Hildreth Varnish Co., 90 West St., New York, N. Y.

Hoffman Paint & Varnish Co., 3 Medford St., Boston, Mass.

Indianapolis Paint & Color Co., 120-24 S. Illinois St., Indianapolis, Ind. "Capitol City."

Johnston Paint Co., R. F., Pearl & Main Sts., Cincinnati, O.

Keystone Paint & Filler Co., Munsey, Pa.

King—See Chicago White Lead & Oil Co.

Lowe Bros. Co., 450 E. Third St., Dayton, O. "High Standard."

Lucas & Co., John, 322-30 Race St., Philadelphia, Pa.

Masury & Son, John W., 44-50 Jay St., Brooklyn, N. Y.

Moore & Co., Benjamin, 331-33 Front St., Brooklyn, N. Y.

Moser Co., Chas., 215-27 E. Ninth St., Cincinnati, O.

Mountain Varnish & Color Works, Toledo, O.

Murphy Varnish Co., Chestnut & McWhorter Sts., Newark, N. J.

Nice, Eugene E., 268-74 S. Second St., Philadelphia, Pa.

O'Brien Varnish Co., Johnson & Washington Sts., South Bend, Ind.

Oughto—See Billings-Chapin Co.

Panvar Co., Bulletin Bldg., Philadelphia, Pa. "Fix-A-Mar."

Patterson-Sargent Co., E. 33th & St. Clair Sts., Cleveland, O.

Patton Paint Co., 213 Lake St., Milwaukee, Wis.

Peerless—See Columbus Varnish Co.

Pierce Co., F. O., 12 W. Broadway, New York, N. Y.

St. Louis Surfacer & Paint Co., Arlington Ave. & Terminal Belt Line, St. Louis, Mo.

Sherwin-Williams Co., 100 Canal St., Cleveland, O.

Shrack & Co., C., 152 N. Fourth St., Philadelphia, Pa.

Smith & Co., Edward, Sixth St. & West Ave., Long Island City, N. Y.

Valentine & Co., 456 Fourth Ave., New York, N. Y.

Wadsworth, Howland & Co., 141 Federal St., Boston, Mass. "Bay State."

Willey Co., C. A., 14th & Hancock Sts., Long Island City, N. Y.

Zinsser & Co., W., 195 William St., New York, N. Y. "Bull's-Eye."

PAINTS and VARNISHES for Fords

Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite." (See page 267.)

Ad-el-ite—See Adams & Elting Co.

American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O.

Benoit, Constant A., Brooklyn, N. Y. "Permatex." (See page 225.)

Columbus Varnish Co., Columbus, O. "Peerless." (See page 365.)

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."

Forest City Paint & Varnish Co., 3334 Lakeside Ave., Cleveland, O.

Glidden Co., W. Madison Ave. & L. S. & M. S. Ry., Cleveland, O.

Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker." (See page 227.)

Hanline Bros., 23-25 Howard St., Baltimore, Md.

Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 277.)

Norwesco—See Northwestern Chemical Co.

Peaslee-Gaulbert Co., Louisville, Ky. (See page 677.)

Peerless—See Columbus Varnish Co.

Permatex—See Benoit, Constant A.

Rie-Nie—See Durkee-Atwood Co.

Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill.

Wonder Worker—See Hall-Thompson Co.

PANELS, Wood

Algoma Panel Co., Algoma, Wis.

Almapee Veneer & Seating Co., Algoma, Wis.

American Veneer Co., 15th & Clinton Sts., Hoboken, N. J.

Buffalo Hardwood Lumber Co., 940 Seneca St., Buffalo, N. Y.

Dann Bros. & Co., 84 Franklin St., New Haven, Conn.

Detroit Auto Dash Co., 1501 E. Philadelphia Ave., Detroit, Mich.

Eggers Veneer Seating Co., F., 19th St. & Jefferson Ave., Two Rivers, Wis.

Grand Rapids Veneer Works, 800-900 Front St., Grand Rapids, Mich.

Haskelite Mfg. Corp., 133 W. Washington St., Chicago, Ill.

Keyes Products Co., 120 Broadway, New York, N. Y. "Nevasplit."

Louisville Veneer Mills, 1100-40 Fulton St., Louisville, Ky.

Michigan Veneer Co., 11th St., Alpena, Mich.

Nevasplit—See Keyes Products Co.

New Jersey Veneer Co., 258 W. Railway Ave., Paterson, N. J.

Roddis Lumber & Veneer Co., Marshfield, Wis.

United States Plywood Co., 3 W. 14th St., New York, N. Y. "Casco."

PANELS and SWITCHBOARDS, Charging

Andrae & Sons Co., Julius, 362 Broadway, Milwaukee, Wis.

Automatic Light Co., Ludington, Mich. "Holt." (See page 513.)

Casco—See United States Plywood Co.

Cutler Hammer Mfg. Co., 390 St. Paul Ave., Milwaukee, Wis.

Cutter Co., Geo., Notre Dame & Division Sts., South Bend, Ind.

Electric Products Co., Cleveland, O. (See page 385.)

Fairbanks Co., New York, N. Y. (Sole Distributors for F-B Electric & Mfg. Co., Detroit, Mich.) (See pages 137 to 140.)

F-B Electric & Mfg. Co.—See Fairbanks Co.

Friday Machinery & Supply Co., 20 Main St., Sigourney, Ia.

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Pee Gee

AUTO PAINTING

OUTFIT

Contains everything for painting a Ford or any similar size car, including Top

1 Qt. Pee Gee Auto Flat Black
1 Qt. Pee Gee Auto Gloss Black
1 Pt. Pee Gee Auto Top Dressing
¼ doz. Sheets No. 1 Sand Paper
¼ doz. Sheets No. 00 Sand Paper
1 2" All-Chinese Bristle Varnish Brush

Write today for Dealers' Proposition

PEASLEE-GAULBERT CO., Inc.

Established 1867 Louisville, Ky.

SERVICE STATIONS WANTED

WE ARE THE ORIGINATORS OF THE SERVICE STATION PLAN WHICH PUT THE CONTACT AND BRUSH REPAIR BUSINESS ON A SYSTEMATIC PAYING BASIS., WRITE FOR CONTRACT AND GET ONE OF OUR CASH REGISTERS OF CONTACT PARTS FREE IF YOU DO ANY MAGNETO REPAIRING YOU WILL NEED THE DEFECTOMETER FOR ACCURACY IN LOCATING MAGNETO SHORTS. IT QUICKLY PAYS FOR ITSELF.

PAUL G. NIEHOFF & CO. INC. 232-242 E. OHIO ST. CHICAGO, U.S.A.
METALLURGICAL AND ELECTRICAL LABORATORIES

ATTENTION

We wish to ANNOUNCE that we now do all kinds of expert armature rewinding

QUICK SERVICE

WANTED

Joblots of any Description in Automobile Accessories

Submit sample with lowest prices

The Paul-Irving Co.

1194-96 Bushwick Avenue
Brooklyn, N. Y.

REPAIR PARTS FOR FORDS

We specialize on SPINDLE BODIES, SPINDLE ARMS, SPRING HANGERS, PISTON PINS and HUB KEYS
Screw Machine Products up to 2 1-4 inches

Our facilities also enable us to furnish other parts.
Prices quoted upon application

PARK MANUFACTURING COMPANY

47 LAGRANGE ST. **WORCESTER, MASS.**

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PANELS AND SWITCHBOARDS, Charging (Continued)

General Electric Co., Schenectady, N. Y. (See page 793.)

Hertner Electric & Mfg. Co., 1905 W. 112th St., Cleveland, O.

Holt—See Automatic Light Co.

Leonard Electric Co., Ward, Mt. Vernon, N. Y.

Valley Electric Co., 3157 S. Kingshighway, St. Louis, Mo. (See page 385.)

PANS, Drip

(For placing under cars in garages or sales rooms to catch any oil or grease that may drip)

Advance Engineering Co., 6539 Metta Ave., Cleveland, O.

Badger & Sons Co., E. B., 63-69 Pitts St., Boston, Mass.

Boyle Mfg. Co., Los Angeles, Cal. (See page 1189.)

Briskin Mfg. Co., 215 S. Hoyne Ave., Chicago, Ill.

Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 345.)

Cornwall Mfg. Co., Cleveland, O. (See page 951.)

Cullen-Atkinson Co., 120 Allyn St., Hartford, Conn. "Hartford."

Dover Stamping & Mfg. Co., 385 Putnam Ave., Cambridge, Mass. (See page 433.)

Durlach Can & Iron Works, 234 Bridge St., Brooklyn, N. Y.

Evans Mfg. Co., First Ave. & 21st St., Moline, Ill.

Gem Stamped Steel Co., 16 Beach St., Everett, Mass.

Kirk & Blum, 2346 Spring Grove Ave., Cincinnati, O.

Kleber-Sherman Mfg. Co., 2807 S. Michigan Ave., Chicago, Ill.

Lawco—See Lawson Co.

Lawson Co., F. H., Dept. D., Cincinnati, O. "Lawco." (See page 327.)

Maryland Metal Products Co., Hagerstown, Md.

Michigan Crown Fender Co., N. Huron St., Ypsilanti, Mich.

Murray Auto Parts Mfg. Co., Atlanta, Ga.

Saginaw Sheet Metal Works, 2060 Genesee Ave., Saginaw, Mich.

Sexton Can Co., 123 Broad St., Boston, Mass.

Smyth Garage Pan Mfg. Co., Patchogue, N. Y.

Todd Mfg. Co., 12-14 N. 12th St., Minneapolis, Minn.

Walters Mfg. Co., Fulton Bldg., Pittsburgh, Pa.

Western Metal Specialty Co., 1919 St. Paul Ave., Milwaukee, Wis.

Western Radiator & Fender Mfg. Co., 1430 Bush St., San Francisco, Cal.

PANS, Dust

Automotive Sheet Metal Co., Factory St., & Grand Trunk R. R., Kalamazoo, Mich. "Maco."

Badger & Sons Co., E. B., 63-69 Pitts St., Boston, Mass.

Brummeler-Ruggles Metal Products Co., 1215 Ionia Ave., S. W., Grand Rapids, Mich.

Brummeler's Sons Co., Wm., 413 Ionia Ave., S. W., Grand Rapids, Mich. "Brusco."

Brusco—See Brummeler's Sons Co.

Candler Radiator Co., 1084-86 Jefferson Ave., E., Detroit, Mich. (See page 841.)

Champion Milk Cooler Co., 52-60 Owego St., Cortland, N. Y.

Columbus Auto Brass Co., Columbus, O. (See page 1139.)

Cornwall Mfg. Co., Cleveland, O. (See page 951.)

Detroit Auto Specialty Corp., 6209 Greenwood Ave., Detroit, Mich.

Geuder, Paeschke & Frey Co., 1365-1700 St. Paul Ave., Milwaukee, Wis. (See page 949.)

Gier Pressed Steel Plant of Motor Wheel Corp., Lansing, Mich. (See page 361.)

Kirk & Blum, 2346 Spring Grove Ave., Cincinnati, O.

Maco—See Automotive Sheet Metal Co.

Metal Auto Parts Co., Chase & Henry Sts., Indianapolis, Ind.

Michigan Crown Fender Co., N. Huron St., Ypsilanti, Mich.

Michigan Stamping Co., 11631 Mack Ave., Detroit, Mich.

Mitchell & Son., G. F., 6501 Cedar Ave., Cleveland, O.

Moline Pressed Steel Co., Fifth St., East Moline, Ill.

Morrison & Sons, F., 1330 W. 11th St., Cleveland, O. (See page 951.)

Morrison Steel Products Co., 26-28 E. North St., Buffalo, N. Y.

Motors Metal Mfg. Co., 5936 Milford Ave., Detroit, Mich.

Mullins Body Corp., 182 Franklin Ave., Salem, O.

Murray Mfg. Co., J. W., 571 Clay Ave., Detroit, Mich.

Powell Pressed Steel Co., Hubbard, O. (See page 903.)

Progressive Sheet Metal Co., 1976-84 Central Ave., Cincinnati, O.

Sheet Steel Products Co., Bryan, O.

Universal Metal Parts Mfg. Co., 602-04 W. 52d St., New York, N. Y.

York Corrugating Co., York, Pa.

PANS, FLOOR—See Pans, Drip

PANS, Radiator Splash, for Fords

(Sheet metal guard or pan for front of car to prevent splashing of mud on radiator or lamps)

Gahm-McCormick Co., 906 E. Main St., Streator, Ill. (See page 1139.)

Kirk & Blum, 2346 Spring Grove Ave., Cincinnati, O.

Masco—See Mayer Auto Specialty Co.

Mayer Auto Specialty Co., 452-54 Ellicott Sq., Buffalo, N. Y. "Masco." (See page 1165.)

Progressive Sheet Metal Co., 1976-84 Central Ave., Cincinnati, O.

Steel Products Co., Rice Lake, Wis.

PANS, SOD—See Pans, Dust

PAPER, Emery and Sand

American Glue Co., 121 Beverly St., Boston, Mass. "Union," "New England," "Boston."

Baeder, Adamson & Co., Richmond St. & Allegheny Ave., Philadelphia, Pa. "Old Reliable."

Barton & Son Co., H. H., 109 S. Third St., Philadelphia, Pa.

Behr & Co., Herman, 61 Broadway, New York, N. Y. "Brooklyn."

Boston—See American Glue Co.

Brooklyn—See Behr & Co.

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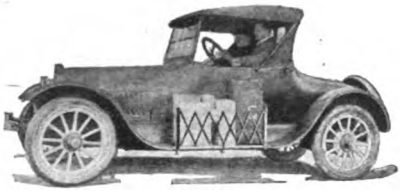
Standley Automobile Utilities

Carry the Standley Line and get in line for bigger profits.
The Standley Automobile Utilities are built for service.

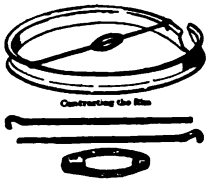
Your customers will need every one of the Standley Utilities. They are a necessity, add to the pleasure of driving and are designed and finished to add to the appearance of the car.



Standley Adjustable Luggage Carrier

Fits any car. It can be carried under the seat and when needed attached in a moment—no tools are required.
When clamped on it forms a complete basket. Clamps are provided with lock nuts which prevent them from working loose.
Adjustable to any length from 10 to 65 inches.

Simple, strong and efficient. No holes in the running board. Does not mar the car. Every car owner in your town needs the Standley Adjustable Luggage Carrier. Constructed of steel. Baked black enamel. Price $6.00. West of Rockies, $6.50. Weight, 13 pounds.



Standley Rim Tool

For contracting and expanding the rim.

The most simple Rim Tool on the market. Can be operated easily with the hand, enabling one to remove the tire in a moment.

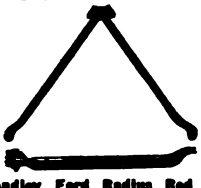
Will remove 32, 34 and 36 inch tires.

Upper cut shows Rim Tool in use, lower cut shows it knocked down for tool kit.

Price, $1.50 (West of Rockies, $1.60).

Finished in baked black enamel.

Weight, 2 lbs.



Standley Ford Radius Rod and Axle Support

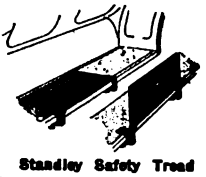
Holds axle rigid and prevents it from doubling under.

Constructed of ½ in. Standard Welded Pipe. Made in two pieces and attached to radius rod with Pressed Steel Clamps.

Price, $1.50 (West of Rockies, $1.60.)

Finished in baked black enamel.

Weight, 5 lbs.



Standley Safety Tread

Prevents slipping on the running board, provides a place to scrape mud and snow from shoes.

Attached with clamps, no tools necessary.

Can be thoroughly cleaned without removing.

Adds to the appearance of the car.

Constructed of steel. Baked black enamel.

Price, $1.50 (West of Rockies, $1.60).

Weight, 2½ lbs.

Standley Ford Truck Chain

For two rear wheels: 12 Cross Chains, 12 Spoke Anchors, 2 Adjustable Rings. Cross Chains form diagonally on tire when pulling and ride in various positions on tire when running idle.

Price, $14.75 (West of Rockies, $15.75).

Standley Ford Running Board Support

Strengthens Frame—Holds Running Boards Rigid and Keeps Them from Sagging—Prolongs Life of Fenders by Reducing Vibration.

Constructed of heavy Angle Iron. Attached to frame with hook bolts fitted with lock washers and nuts. Ends of cross bar fitted with rests which fit snugly under the running board.

Finished in baked black enamel.

Price, $2.50 (West of Rockies, $2.75).

Weight, 9 lbs.

Standley Camp Grid

A necessity to tourists, campers, fishers, hunters, outing parties, scouting parties, picnics.

Adjustable to any length.

Folds in small, compact package 1 by 6 by 10 inches.

Price, $1.50 (West of Rockies, $1.60).

Weight—3½ lbs.

Standley Skid Chain Co., Inc.

Boone, Iowa, U. S. A.

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PAPER, Emery and Sand (Cont'd)

Carborundum Co., Niagara Falls, N. Y.
Carbalox—See United States Sand Paper Co.
Crystal Bay—See Minnesota Mining & Mfg. Co.
Durite—See Manning Abrasive Co.
Hurculundum—See United States Sand Paper Co.
Manning Abrasive Co., 68 George St., Troy, N. Y. "Metalite," "Durite."
Metalite—See Manning Abrasive Co.
Minnesota Mining & Mfg. Co., 564 W. Monroe St., Chicago, Ill. "Crystal Bay," "Three-M-Ite."
New England—See American Glue Co.
Old Reliable—See Baeder, Adamson & Co.
Three-M-Ite—See Minnesota Mining & Mfg. Co.
Union—See American Glue Co.
United States Sand Paper Co., 1560 Erie Ave., Williamsport, Pa. "Carbalox," "Herculundum."
Wausau Abrasives Co., 118 S. Clinton St., Chicago, Ill. "Wausite."
Wausite—See Wausau Abrasives Co.

PAPER, FRICTION—See Frictions, Fibre

PAPER, SAND—See Paper, Emery and Sand

PAPER SHIPPING COVERS—See Covers, Paper and Canvas Shipping

PAPER TAPES, AIRPLANE—See Tapes, Airplane Paper

PARABOLIC REFLECTORS FOR FORDS—See Reflectors, Headlight

PARACHUTES

Irving Air-Chute Co., 523 Main St., Buffalo, N. Y.
Knabenshue Aircraft Corp., 140 W. 42d St., New York, N. Y.
Smith Aerial Equipment Co., Floyd, 367 W. Adams St., Chicago, Ill.

PARKING LIGHTS—See Lights, Parking

PARTERS, CAM-SHAFT BEARING—See Tools, Cam-Shaft Bearing Parting for Fords

PARTS, Aircraft Wood

(Ribs, Struts, Landing Gears, etc.)

American Veneer Co., 15th & Clinton Sts., Hoboken, N. J.
Grand Rapids Chair Co., 1661 Monroe Ave., Grand Rapids, Mich.
Hamilton Aero Mfg. Co., Milwaukee, Wis.
Hamilton Mfg. Co., Two Rivers, Wis.
Huttig Sash & Door Co., 1206 S. Vandeventer Ave., St. Louis, Mo.
Imperial Furniture Co., Grand Rapids, Mich.
Lester Piano Co., 1306 Chestnut St., Philadelphia, Pa.
Peck & Co., Hardman, New York, N. Y.
Pigeon Hollow Spar Co., 131 Coleridge St., East Boston, Mass.
Rogers Construction Co., Gloucester City, N. J.
West Woodworking Co., 303-24 N. Ada St., Chicago, Ill.

PARTS, BATTERY REPAIR—See Parts, Storage Battery Repair

PARTS, DISTRIBUTOR—See Parts, Magneto and Coil

PARTS, COIL—See Parts, Magneto, Coil and Distributor

PARTS, Magneto, Coil and Distributor

A. C. Ignition Co., Marquette Bldg., Detroit, Mich.
Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for "Sturdy" Parts.) (See page 275.)
Automotive Electrical Sales Co., 2637 S. Michigan Ave., Chicago, Ill. (Distributors.) (See page 421.)
Automotive Specialty Co., 311 W. 59th St., New York, N. Y. "Tacso."
Ban-Rov & Co., 2230 S. Wood St., Chicago, Ill.
Bay State Research & Mfg. Co., 170 Third St., Chelsea, Mass.
Bee Cee—See Brown & Caine.
Brown & Caine, 2112 Michigan Ave., Chicago, Ill. "Bee Cee." (See page 625.)
Contact Metals Co., 221 E. 23rd St., Chicago, Ill.
Eastern Parts Mfg. Co., 135 Spring St., New York, N. Y. "Pemko." (See page 709.)
Gilfillian Bros., Smelting & Refining Co., 217 W. Sixth St., Los Angeles, Cal.
Gray-Heath Co., 1440 S. Michigan Ave., Chicago, Ill. "Sturdy." (See page 741.)
Guaranteed Magneto Parts Co., 210 W. 54th St., New York, N. Y. (See page 1147.)
H. & L. Ignition Parts Mfg. Co., 300 W. Broadway, New York, N. Y.
Hygrade Parts Co., 10 W. 62nd St., New York, N. Y.
J. & B. Mfg. Co., Pittsfield, Mass. (See page 739.)
Millwood-Brackett Co., 1601 Locust St., Des Moines, Ia. (See page 1151.)
Nelson Mfg Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)
Niehoff & Co., Paul G., 232-42 E. Ohio St., Chicago, Ill. (See page 677.)
Otter Mfg. Co., 243 W. 17th St., New York, N. Y.
Pemko—See Eastern Parts Mfg. Co.
Specialty Mfg. Co., Arlington, Mass. "Superior."
Specialty Products Co., 494 Mulberry St., Newark, N. J.
Standard Ignition Co., Owen Bldg., Detroit, Mich. (See page 1177.)
Standard Motor Products Co., 43-45 E. 19th St., New York, N. Y.
Sturdy—See Gray-Heath Co.
Superior—See Specialty Mfg. Co.
Tacso—See Automotive Specialty Co.
Weidenhoff, Joseph, 4352 W. Roosevelt Rd., Chicago, Ill.

PARTS, ORPHAN CAR, Repair

(Covering Dealers in Repair Parts for Cars no longer manufactured)

Abbott Motor Car Co., Cleveland, O.
Alco Service Co., 158-62 N. 22nd St., Philadelphia, Pa.
American Motors Parts Co., Washington Ave. & Geisendorf St., Indianapolis, Ind.
Anchor Motor Car Co., St. Louis, Mo.
Auto Gear & Parts Co., 291-97 Marietta St., Atlanta, Ga. (See page 489.)
Auto Gear Co., 1407 Hennepin Ave., Minneapolis, Minn.

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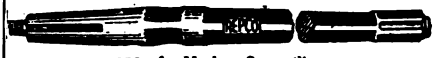
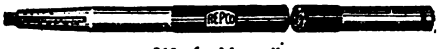


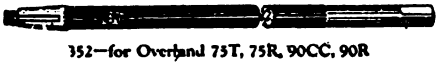
250—for Hudson Super Six



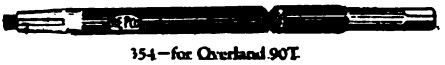
310—for Maxwell

312—Drive Shaft for Maxwell

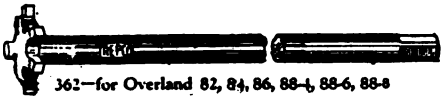
350—for Overland 69, 79, 80, 81, 83



352—for Overland 75T, 75R, 90CC, 90R

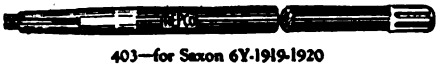


354—for Overland 90T

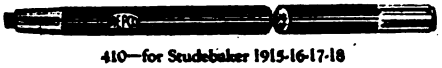


362—for Overland 82, 84, 86, 88-4, 88-6, 88-8

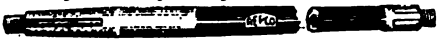
367—Propeller Shaft for Overland



403—for Saxon 6Y-1919-1920



410—for Studebaker 1915-16-17-18

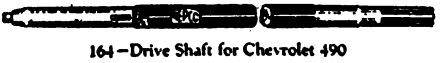


130—for Buick

152—for Chalmers

160—for Chevrolet 490

161—for Chevrolet "Baby Grand"



164—Drive Shaft for Chevrolet 490

180—for Dodge

190—for Dort

210—for Ford

211—Drive Shaft for Ford

220—for Grant Six

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PARTS, Repair (Continued)

Auto Parts Co., 4114 Olive St., St. Louis, Mo.
Auto Parts & Repair Co., 101 Liberty St., Springfield, Mass.
Auto Salvage Co., 2323-25 Locust St., St. Louis, Mo.
Auto Salvage & Exchange Co., 1317-19 Locust St., Des Moines, Ia.
Babel, L., 371 E. 29th St., Chicago, Ill.
Bauer Machine Co., 109-13 W. 18th St., Kansas City, Mo.
Belcher Engineering Co., 94 Broadway, Cambridge, Mass.
Bergdoll Co., Louis J., Philadelphia, Pa.
Berkshire Motor Co., Pittsfield, Mass.
Boulevard Motor Co., Cambridge, Mass.
Chadwick Engineering Works, Pottstown, Pa.
Chandler, Ralph J., 526 S. Flower St., Los Angeles, Cal.
Clark Motor Car Co., Shelbyville, Ind.
Colter, A. W., Toledo, O.
Columbia Auto Repair Co., 19 Buckingham St., Hartford, Conn.
Columbus Buggy Parts Co., 400 Dublin Ave., Columbus, O.
Connecticut Auto Parts Co., 583 Franklin Ave., Hartford, Conn.
Corbin Motor Vehicle Co., New Britain, Conn.
Council Bluffs Auto Parts Co., Council Bluffs, Ia.
Cutting Co., Robt. M., 2635 S. Wabash Ave., Chicago, Ill.
Daniel-Akeley Auto Parts Co., 79-81 Galena Blvd., Aurora, Ill.
DeKalb Wagon Co., DeKalb, Ill.
DeTamble Motors Co., Anderson, Ind.
Empire Automobile Co., Indianapolis, Ind.
Enger Motor Car Co., Indianapolis, Ind.
Erbes Motor Car Co., L. C., 2654 W. University Ave., St. Paul, Minn.
Filer & Stowell, Milwaukee, Wis.
Fort Dodge Auto Wrecking Co., 507 First Ave., Fort Dodge, Ia.
Frank Co., Paul A., 2349 Michigan Ave., Chicago, Ill.
Fulton & Gibson, David City, Neb.
Gaeth Motor Co., 2101-17 Abbey Ave., Cleveland, O.
Goldberg, H., 1420 S. Eighth St., Philadelphia, Pa.
Gorey & Co., Jos. C., 354 West 50th St., New York, N. Y.
Great Western Automobile Co., Kalamazoo, Mich.
Gustin Automobile Co., 18-20 E. Mitchell Ave., Cincinnati, Ohio.
Gwilliam Co., 23 Flatbush Ave., Brooklyn, N. Y. (See page 177.)
Haas Electric & Mfg. Co., R., 305-07 E. Monroe St., Springfield, Ill.
Haberer & Co., Cincinnati, Ohio.
Hal Motor Car Co., Cleveland, Ohio.
Hartford Motor Car Co., 410 Main St., Hartford, Conn.
Hassler Motor Car Co., Indianapolis, Ind.
Henderson Motor Car Co., 1715 Catherine St., Detroit, Mich.
Hersch Auto Sales & Parts Co., 1970-78 E. 55th St., Cleveland, O.
Huron Motor Car Co., Dearborn, Mich.
Indiana Auto Parts & Tire Co., 318 N. Illinois St., Indianapolis, Ind.
Johnson Service Co., Milwaukee, Wis.
K. C. Auto Parts Co., 1327 McGee St., Kansas City, Mo.
Kany, A. S., 633 Homewood Ave., Dayton, O.
Keith Bros., Elkhart, Ind.
Kelland Motor Car Co., 58 Elm St., Newark, N. J.
Kelsey Motor Co., Hartford, Conn.
Krit Motor Car Co., 1715 Catherine St., Detroit, Mich.
Levene Motor Co., 2200 Diamond St., Philadelphia, Pa. (See page 531.)
Levengood, A. J., 153 N. Fourth St., Reading, Pa.
Lion Motor Parts Co., Philadelphia, Pa.
Longaker Co., V. A., 448-50 N. Capitol Ave., Indianapolis, Ind.
Longest Bros. Co., 725-29 S. Third St., Louisville, Ky.
Loper, G. E. Port Jefferson, N. Y.
Lozier Motor Co., Detroit, Mich.
Marion Motor Service Co., 430 N. Capitol Ave., Indianapolis, Ind.
Mason Motor Car Co., 1715 Catherine St., Detroit, Mich.
Matheson Co., Frank F., 694 Wyoming Ave., Wilkes-Barre, Pa.
Maxwell Bros. Auto Salvage Co., St. Louis, Mo.
Meteor Motor Car Co., Shelbyville, Ind.
Michigan Motor Car Parts Co., Kalamazoo, Mich.
Motor Corp., rear 1309 Race St., Philadelphia, Pa.
Muskegon Auto Co., 14-16 W. Clay Ave., Muskegon, Mich.
Mutual Motors Co., 500 Schenck St., North Tonawanda, N. Y.
Northway Auto Parts & Sales Co., 223 Kearney St., Cincinnati, O.
Pacific Motor Car Exchange Co., 221 W. 53d St., New York, N. Y.
Pathfinder Co., Indianapolis, Ind.
Petrie & Morganthall, Greencastle, Pa.
Philadelphia Machine Works, 61-67 Laurel St., Philadelphia, Pa.
Pierce Motor Co., Racine, Wis.
Pruyn Co., 633 N. Broad St., Philadelphia, Pa.
Pullman Motor Car Co., York, Pa.
Pungs-Finch Auto & Gas Engine Co., Detroit, Mich.
Puritan Machine Co., 70 Puritan Bldg., Detroit, Mich. (See page 683.)
Queen City Auto Parts Co., 633 Main St., Cincinnati, Ohio.
R. C. H. Corp., Detroit, Mich.
Randolph Motor Truck Co., Flint, Mich.
Red Arrow Auto Co., E. River St., Orange, Mass.
Replacement Parts Co., 1012 Baltimore Ave., Kansas City, Mo. (See page 681.)
Republic Motor Car Co., Youngstown, Ohio.
Riverside Machinery Depot, 251 St. Aubin Ave., Detroit, Mich.
Rosenfield, J., 521 Sixth St., So., Boston, Mass.
St. Louis Car Co., 3000 N. Broadway, St. Louis, Mo.
Smith, G. B., 228 Halsey St., Newark, N. J.
Standard Motor Parts Co., Newcastle, Ind.
Steele Co., W. M., 98-100 Beacon St., Worcester, Mass.
Stehle, R. W., 1523 Brandywine St., Philadelphia, Pa.
Stevens-Duryea Co. 72 12th St., San Francisco, Cal.
Stevens-Duryea Co., Chicopee Falls, Mass.
Stevens-Duryea Service, 22 W. 61st St., New York, N. Y.
Toepfer's Sons, Frank, 45 National Ave., Milwaukee, Wis.
United Auto Parts Co., Omaha, Neb. (See page 683.)
Walk Hill Garage, 726 Walk Hill St., Mattapan, Mass.

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Broc Electric	Monarch
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Cartercar	Palmer-Singer
Chevrolet Model "C"	Pathfinder
Chevrolet Model "L"	Pontiac-Chassis
Crescent	Princess
Cutting	Pullman
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Fisher	Standard Detroit Tractor
Flanders	Stoddard-Dayton
Grabowsky	Sun
Havers	Trumbull
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PARTS, Repair (Continued)

Walker & Barkman Mfg. Co., 408 Main St., Hartford, Conn.

Walker & Barkman Mfg. Co., Hartford, Conn.

Warshawsky & Co., 1915-31 S. State St., Chicago, Ill. (See page 697.)

Wichita Auto Wrecking Co., 807 West Douglas Ave., Wichita, Kans.

Wilco Co., 172 Griswold St., Detroit, Mich. (See page 221.)

Wolf Auto Parts & Tire Co., I., 619 N. Illinois St., Indianapolis, Ind.

Wyckoff Auto Salvage Co., Sioux City, Iowa.

Zimmerman Mfg. Co., Auburn, Ind.

PARTS, Repair, for Fords

(Covering Dealers in Repair Parts for Ford Cars who advertise in this Publication)

Dunham Co., Thos., Aurora, Ill. (See page 167.)

F. H. & S. Co., 624 S. Michigan Ave., Chicago, Ill. (See page 527.)

Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass. (See page 417.)

Park Mfg. Co., 47 Lagrange St., Worcester, Mass. (See page 677.)

U. S. Metal Goods Co., 5211 Euclid Ave., Cleveland, O. (See page 685.)

PARTS, Speedometer Repair

General Speedometer Repair Co., 119-21 West 63rd St., New York, N. Y. (See page 697.)

Ogden Mfg. Co., Plymouth, Ind.

Saco—See Speedometer Accessories.

Speedometer Accessories, Plymouth, Ind. "Saco."

PARTS, Storage Battery Repair

American Storage Battery Parts Co., 650-60 E. 168rd St., Cleveland, O. (See page 1195.)

Arthur Storage Battery Supply Co., 2540-42 Cottage Grove Ave., Chicago, Ill. (See page 163.)

Automotive Craftsman, 1428 S. Wabash Ave., Chicago, Ill.

Automotive Electrical Sales Co., 2637 S. Michigan Ave., Chicago, Ill. (Distributors.) (See page 421.)

Banner Battery Co., 1219 S. Wabash Ave., Chicago, Ill.

Big Four Battery Co., Calumet & Gostlin Sts., Hammond, Ind.

Campbell Electric Co., 1529 Wyandotte St., Kansas City, Mo.

Champion Storage Battery Corp., 193 Church St., Poughkeepsie, N. Y.

Ferry Mfg. Co., 2119 S. Fourth St., St. Louis, Mo.

General Storage Battery Co., 2005 Locust St., St. Louis, Mo.

McLean Storage Battery Co., 721 Frankfort St., Cleveland, O.

Magneto Parts Co., 400 W. 23d St., New York, N. Y.

Radio Storage Battery Co., 1507 Franklin St., San Francisco, Cal.

R. T. Sales Co., 226 N. Adams St., Green Bay, Wis.

Service Station Supply Co., Penn Ave., Wilkinsburg Station, Pittsburgh, Pa. (See page 729.)

Smith Co., Harrison, Oklahoma City, Okla.

Storage Battery Supply Co., 1535 Cherry St., Philadelphia, Pa. (See page 1125.)

PARTS, Wood Automobile Body

Builders' Mfg. Co., 828-30 N. Wells St., Chicago, Ill. (See page 491.)

Detroit Auto Dash Co., 1501 E. Philadelphia Ave., Detroit, Mich.

Hanson-Ward Veneer Co., Bay City, Mich. (See page 345.)

Mengel Co., Louisville, Ky.

Michigan Truck & Lumber Co., Holly, Mich.

Pfau Mfg. Co., Cincinnati, O.

Sisman Co., Andrew C., 1221 Beaufait Ave., Detroit, Mich.

PASTE, HAND—See Soaps, Hand

PASTE, POLISHING—See Polishes, Metal

PASTE, SOLDERING—See Flux, Soldering

PASTE, Trimmers

Buckeye Paste Co., 270 S. Wall St., Columbus, O.

PATCHES, Tire Repair

(See also Shoes, Inner Tire; also Sleeves, Tire Repair)

Acme—See Chicago Tire Goods Co.

Acme—See Freer-Petty Auto Accessories Co.

Ajax Rubber Co., 220 W. 57th St., New York, N. Y. (See page 1009.)

All Ready—See Miller Rubber Co.

Alwas-Hold Auto Products Co., 6929 Stony Island Ave., Chicago, Ill.

Amazon Rubber Co., Akron, O. "O'Neill."

American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "Rub-R-Bak." "Vulkless."

American Rubber & Tire Co., 100 Beech St., Akron, O. "Cling-Tite."

Apache—See Phoenix Laboratories.

Arlington—See Voorhees Rubber Mfg. Co.

Atlas Rubber Co., 326 W. Grand Ave., Chicago, Ill.

Auto Boot Mfg. Co., Hutton Bldg., Spokane, Wash. "Porcupine."

Auto-Joy—See Bart Mfg. Co.

Auto Specialties Mfg. Co., Buffalo, N. Y. "Beats All." (See page 1193.)

Auto Specialty Mfg. Co., 418 S. Barstow St., Eau Claire, Wis. "Stuck-Tite."

Automotive Supply Mfg. Co., 2005½ Main St., Dallas, Tex. "Cactus."

Bart Mfg. Co., 421 S. Fifth St., Minneapolis, Minn. "Auto-Joy." (See page 697.)

Bear-Cat Products Co., Capitol Hill Sta., Oklahoma City, Okla. "Sta-Tite."

Beats-All—See Auto Specialties Mfg. Co.

Black Panther Corp., 2406 S. Robinson St., Oklahoma City, Okla.

Black—See Sure-Tite Mfg. Co.

Blaylock Tire & Rubber Co., G. E., 1811 N. Charles St., Baltimore, Md.

Blue Ribbon—See International Metal Polish Co.

Boggs Co., Kirk A., Fort Dodge, Ia. "Yankee Grip."

Born Vulcanizing & Tire Agency, Main & Church Sts., Belleville, Ill.

Bowes Co., Robert M., 124-26 E. Ohio St., Indianapolis, Ind. "Seal-Fast."

Boyd's Patch Co., 618 W. Grand Ave., Des Moines, Ia.

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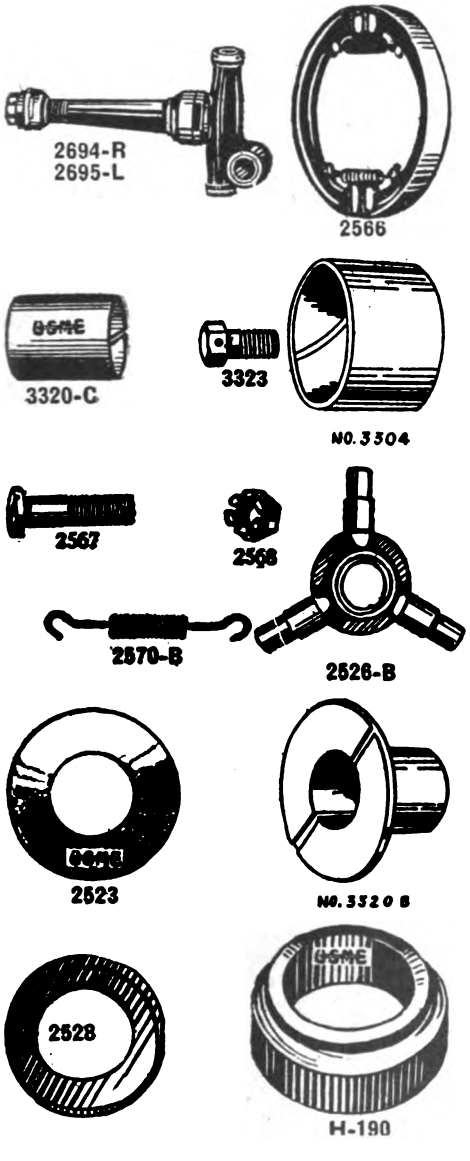

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PATCHES, Tire Repair (Cont'd)

Brictson Mfg. Co., 14th & Farnum Sts., Omaha, Neb.

Buffalo Bull—See Hoffeld & Co.

Bull Dog—See Polson Rubber Co.

Bull Dog Tire Patch Co., 626-28 E. Locust St., Des Moines, Ia.

Bull Grip, 57-61 Eugenia St., Atlanta, Ga.

Busy Bee Motor Car Co., 4451 Manchester Ave., St. Louis, Mo.

Cactus—See Automotive Supply Mfg. Co.

Caplan Bros., 77 Bedford St., Boston, Mass. "Tiger Grip."

Carbo-Line Co., Hastings, Neb. "Defiance Never-Slip."

Chicago Tire Goods Co., 1216 Webster Ave., Chicago, Ill. "Acme."

Cling-Tite—See American Rubber & Tire Co.

Continental Rubber Works, 1902 Liberty St., Erie, Pa. "Vitalic."

Cord-Wyckoff Tire & Rubber Co., 416 Douglas St., Sioux City, Ia.

Cox, David H., 812 Chestnut St., Roselle, N. J.

Cross—See General Tire & Rubber Co.

Dannenhirsch Co., 1905 W. Dauphin St., Philadelphia, Pa. "Danno."

Danno—See Dannenhirsch Co.

Defiance Never-Slip—See Carbo Line Co.

Diamond Holdfast Rubber Co., 33 Auburn Ave., Atlanta, Ga.

Dickard-Marx Rubber Co., Monroe, La. "Styx."

Doerner & Co., 4127 32d St., Cincinnati, O.

Double Fabric Tire Co., 60 W. Ninth St., Auburn, Ind.

Dow Wire & Iron Works, Louisville, Ky. (See page 157.)

Dur-a-bul—See Durham Mfg. Co.

Durham Mfg. Co., 1518 Grand Ave., Kansas City, Mo. "Dur-a-bul."

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."

Eagle Grip—See Mormiles Co.

Eastern Rubber Co., 29th & Brown Sts., Philadelphia, Pa. "Magic."

Eckrode Rubber Co., 118 Adams St., Newark, N. J.

Eclipse Supply Co., 253 Church St., New York, N. Y.

Edelstone Fabric Co., Wm. W., 25 Thorndike St., Cambridge, Mass. "Wedeo." (See page 563.)

Elgin Motor Power Mfg. Co., 416 Third Ave., Cedar Rapids, Ia.

Empire Rubber & Tire Co., Mulberry St. & Clinton Ave., Trenton, N. J.

Eno Rubber Co., 1026 S. Los Angeles St., Los Angeles, Cal. "Peerless."

Esner Mfg. Co., 206 Green St., Peoria, Ill. "Soo-Grip."

Evans Mfg. Co., 620-22 E. 63rd St., Chicago, Ill.

Ever-Grip Mfg. Co., 2106 Main St., Peoria, Ill.

Everlasting Mfg. Co., 528 Pacific Bldg., San Francisco, Cal.

Everloo—See Wood Co.

Falls Rubber Co., Cuyahoga Falls, O.

Federal Rubber Co. (Cudahy), Milwaukee, Wis.

Firestone Tire & Rubber Co., Miller & Sweitzer Aves., Akron, O.

Fisher Mfg. Co., 735 O St., Lincoln, Neb.

Fleer-Petty Auto Accessories Co., 1421 Olive St., St. Louis, Mo. "Acme."

4-A Products Co., 3103 Downing St., Denver, Colo. "Zip." (See page 879.)

Gates Rubber Co., Broadway & Tennessee St., Denver, Colo. "Vulco."

General Tire & Rubber Co., E. Ma[illegible] Akron, O. "Major," "Cross."

Giant Tire & Rubber Co., Lima St. & Wester[illegible] Ave., Findlay, Ohio. "M & M Stick Tite."

Goodrich Co., B. F., S. Main St., Akron, O.

Goodyear Tire & Rubber Co., Akron, O. (See page 1015.)

Gorilla—See McCandless & Son Mfg. Co.

Griptite—See St. Louis Rubber Cement Co.

Hadley Bros.-Uhl Co., 3948-52 W. Pine Blvd., St. Louis, Mo. "Okeh Spee-D."

Hall-Thompson Co., Dept. A, Hartford, Conn. "Vulco-Visco." (See page 227.)

Hamilton Rubber Mfg. Co., Mead & Princ[illegible] Sts., Trenton, N. J.

Harlgens Co., Erie, Pa. "Kant-Kum-Off."

Hastee—See Johnson & Son.

Henkins, A. C., Henry, Ill. "Shoorgrip."

Highway Rubber Corp., 1009 Chestnut St., St. Louis, Mo.

Hoffeld & Co., R., 61-69 Carroll St., Buffalo, N. Y. "Buffalo Bull."

Hold-Fast—See Polson Rubber Co.

Horsey Products Co., 4815 Lexington Ave., Cleveland, O. (See page 1049.)

Howe Rubber Co., Codwise Ave., New Brunswick, N. J.

Indiana Rubber & Insulated Wire Co., Jonesboro, Ind.

Industrial Rubber Goods Co., Broad St., St. Joseph, Mich. (See page 481.)

International Metal Polish Co., Quill St. & Belt R.R., Indianapolis, Ind. "Blue Ribbon."

Iowa Cord Tire Co., Fleming Bldg., Des Moines, Ia.

Jackels & Campbell Co., 1622 McGee St., Kansas City, Mo.

Jiffy—See Johnstown Rubber Co.

Johnson & Son, S. C., 1012 16th St., Racine, Wis. "Hastee."

Johnstown Rubber Co., Johnstown, Pa. "Jiffy."

Jumbo—See Super-Vulcanizer Mfg. Co.

Kantkumoff—See Stearns Rubber Products Co.

Keystone Rubber Mfg. Co., 135 E. 11th St., Erie, Pa. "Leak-Nit."

Las-Stik Patch Mfg. Co., Hamilton, O. (See page 693.)

Leak-Nit—See Keystone Rubber Mfg. Co.

Leak Proof Mfg. Co., Vincennes, Ind.

Lee Tire & Rubber Co., 245 W. 55th St., New York, N. Y.

Legnard Co., A. B., Dept. 14, Waukegan, Ill. (See page 649.)

Locktite Patch Co., 7850 Marrow St., Detroit, Mich.

Lockwood Mfg. Co., Kansas City, Mo. "Zip." (See page 323.)

Lox-It—See Superior Fabric Patch Co.

M & M Stick Tite—See Giant Tire & Rubber Co.

McCandless & Son Mfg. Co., A. C., 412 N. Market St., Wichita, Kans. "Gorilla."

Magic—See Eastern Rubber Co.

Magic Auto Devices Co., Lynbrook, N. Y.

Major—See General Tire & Rubber Co.

Malco—See Malouf Co.

Malouf Co., B. I., 146 S. W. Temple St., Salt Lake City, Utah. "Malco."

Manhattan Rubber Mfg. Co., Willett St., Passaic, N. J.

Mengo Products Co., 537 Rosedale St. (Wilkinsburg), Pittsburgh, Pa. "Stictite."

Michelin Tire Co., Milltown, N. J.

Miller, Chas. E., 1400 S. Meridian St., Anderson, Ind.

Miller Rubber Co., Akron, O. "All Ready." (See page 979.)

Miller's—See Quick-Fix Tire Patch Co.

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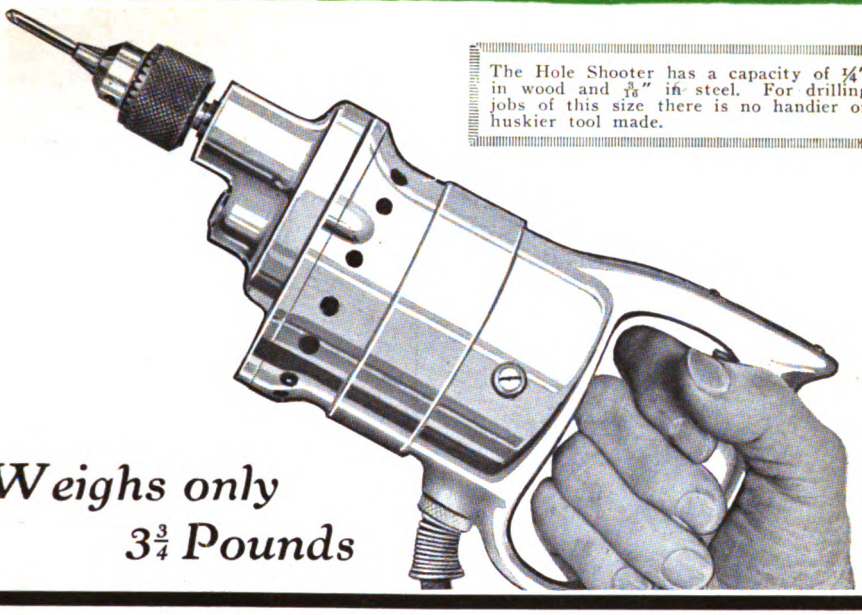

The Hole Shooter has a capacity of ¼" in wood and $\frac{3}{16}$" in steel. For drilling jobs of this size there is no handier or huskier tool made.

Weighs only 3¾ Pounds

A Handy High-Speed Drill for Every Automobile Worker

Garagemen, automobile trimmers and body-builders find the 3¾-pound Hole Shooter "made to order" for dozens of small drilling jobs that are hard, awkward work with an 8 to 10-pound power drill or a hand tool. This handy electric drill is easier on the wrist and does more accurate work faster, with a big saving in drill points.

For installing clocks, speedometers or cigar lighters on instrument boards; for attaching robe-rails or sun visors; for equipping enclosed cars with spot-lights or mirrors, The Hole Shooter is a big time-saver. Just the tool for body work, such as fastening upholstery moulding, attaching locks, hinges and curtains, or installing vanity cases or flower vases.

The Hole Shooter is a guaranteed, standardized tool—designed right, beautifully made, aluminum cased. Lasts longer than heavier, higher-priced drills. List price, $42.00.

To save time, order The Hole Shooter direct, to be billed through your jobber.

A. H. PETERSEN MFG. COMPANY
MILWAUKEE, WISCONSIN

Specifications

Capacity, 0 to $\frac{3}{16}$" in steel; 0 to ¼" in wood.

Weight, 3¾ pounds.

Motor, Universal type; Speed, 1600 R.P.M.; 110 or 220 volt.

All parts interchangeable.

Offset Spindle.

Gears, Nickel alloy steel, heat-treated by special Petersen process.

Centrifugal Fan keeps motor cool.

Cutler - Hammer Push Button Switch, conveniently located in upper part of grip.

Equipped with Jacob's Chuck.

Price, complete with 10-foot cord, **$42.00 list.**

THE HOLE SHOOTER

C. N. & F. W. JONAS Sales Representatives
608 So. Dearborn St. CHICAGO, ILL.

Literature on Request

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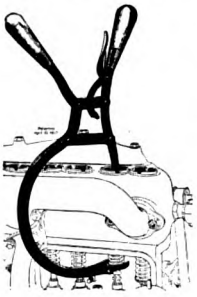
C. N. & F. W. JONAS

MAPSON'S "PERFECTION" VALVE LIFTER



Makes a Friend for Life of every Mechanic who gives it a test

Quick, positive, effortless action. Overhead manifolds, dashes and piping do not interfere. Imposes no side strain on valve stem. Adjustable jaws. Built of steel forgings.

Standard model, $7.50

Heavy Duty model, $9.00.

Mack Truck model, $12.00

Special Models on Order.

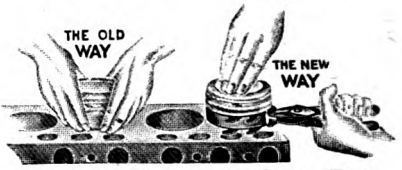
Manufactured by

PORTER, INCORPORATED

San Diego, California

The VICTORY Piston Ring Compressor

Fills a Long Felt Want in Every Garage



Saves Time — Saves Rings — Inserts pistons into either top or bottom of cylinder in ten seconds without danger of ring breakage. **Instantaneously adjustable** to all size rings from 2¾ inches to 9 inches. Used on any type of motor.

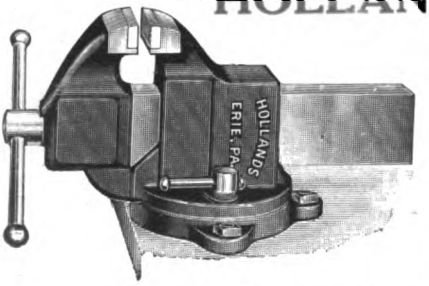
List Price, $2.00

DEALERS

This tool is sold by all Accessory Jobbers

The Victory Ring Compressor Co., Inc.
Grand Rapids, Michigan
Sales Office: 1462 S. Wabash Ave., Chicago

"HOLLANDS" VISES



Hollands Vises—for strength, durability and firm gripping power—are superior to all other makes, and every tool bearing the Hollands name is **fully guaranteed.**

Manufactured of a high-grade composition that is especially adapted for the hard service to which vises are subjected and, to doubly insure against possible breakage, all points of most strain are heavily reinforced.

The jaws of our vises are faced with steel made to a special formula, to insure a tough, hard jaw that positively will not chip.

HOLLANDS MFG. COMPANY
ERIE, PA.

"VICTOR" BOLT and RIVET CLIPPER

Tool Steel Jaws all machined and will interchange. Rubber Buffers between the handles take the jar from the wrist as well as protecting the operator's hand.

Sizes of "Victor" Clippers

No.		List
00	for ¼" Bolts..	$2.50
0	for 5/16" Bolts..	3.75
1	for ⅜" Bolts..	5.00
2	for ½" Bolts..	7.00
3	for ⅝" Bolts..	9.00

ROBERTS MFG. COMPANY
Boston, Mass.

C. N. & F. W. JONAS

Atlanta
San Francisco
Dallas
Winnipeg, Can.

Sales Representatives
608 SO. DEARBORN ST.
CHICAGO - - ILL.

Los Angeles
New York
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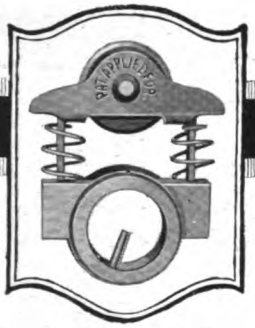
C. N. & F. W. JONAS



The Brush is the Thing

NECEDAH TIMER

THE BRUSH IS THE THING

A Few Reasons "Why"—

Retail price, complete, $2.50
Boiler Assembly, 75 cents
The Necedah Timer Kept Lubricated Lasts Indefinitely
Dealers order through your Jobber

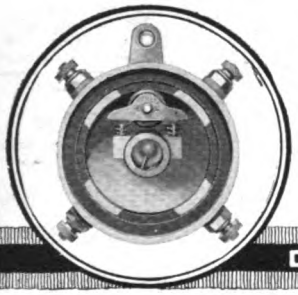
The brush has a "straight-from-the-shoulder" action that holds it squarely and firmly against the fibre ring which remains as smooth as glass even after long usage.

The contact segments are made of high grade steel, electrically welded to the posts and firmly embedded in the fibre.

The fibre is of a special laminated construction, impregnated against oil and properly aged to avoid warping.

The patented spring hinged oil cap "snaps" up out of the way and uncovers a large sized oil hole, making it an easy matter to use either an oil can or grease gun.

The entire assembly is enclosed in a nickel-plated extra heavy steel shell to prevent vibration



NECEDAH MANUFACTURING CO.

Factory
Necedah, Wis.

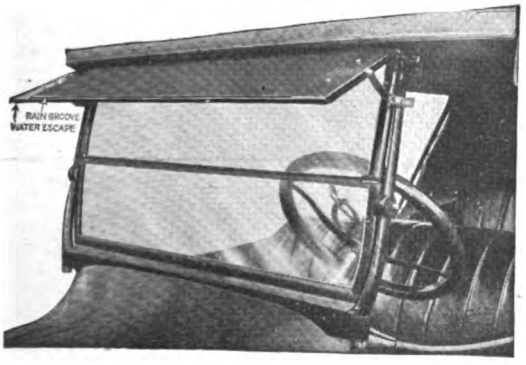
Sales Dept.,
2907 Meinecke Ave.,
Milwaukee, Wis.

DAILY CAPACITY 2000 TIMERS

"RAIN-SUN"

(Trade Mark)

WINDSHIELD VISOR



FITS ANY CAR

OPEN OR ENCLOSED

HIGH GRADE SHEET STEEL

ADJUSTABLE SHADE

Finished in Black and Green Enamel with Heavy Nickeled Brass Adjusting Brace.

Shields made in three sizes, 3 inch adjustment in each.

No. 1 from 35½ in. to 38½ in.
No. 2 from 38½ in. to 41½ in.
No. 3 from 41½ in. to 44½ in.

Extra Brackets of either open or enclosed car 20c per pair.

List Price - $12.00

Manufacturers

RAIN-SUN VISION SHIELD CO.

C. N & F. W. JONAS

Sales Representatives

608 SO. DEARBORN ST.
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Atlanta
San Francisco
Dallas
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Los Angeles
New York
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Kansas City

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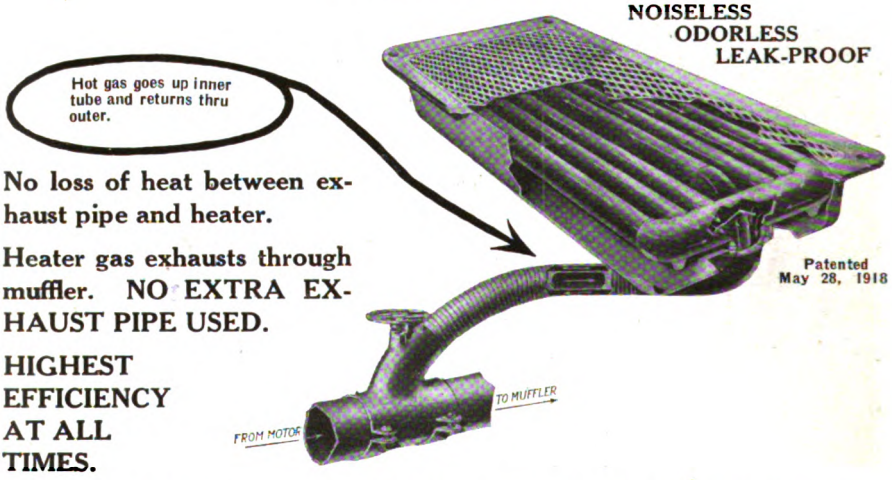
C. N. & F. W. JONAS

The Noble Auto Heater

"It's Heat Insulated"

NOISELESS
ODORLESS
LEAK-PROOF



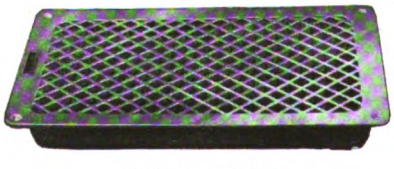
Patented
May 28, 1918

No loss of heat between exhaust pipe and heater.

Heater gas exhausts through muffler. NO EXTRA EXHAUST PIPE USED.

HIGHEST EFFICIENCY AT ALL TIMES.

The Valve directs practically entire exhaust thru Heater
FURNISHED IN THE FOLLOWING TYPES



FLOOR TYPE

Type "B"—9½"x16½"	$30.00
Type "BB"—9½"x15"	30.00
Type "DB"—9½"x16½"	45.00

For cars with two exhaust pipes.

FOOTBOARD TYPE

Type "A"—15½" long	$30.00
Type "C"—18¾ long	35.00
Type "EE"—30" long	45.00
Type "D"—23½" long	32.50
Type "DD"—29½" long	35.00

Above prices are list and include all necessary fittings.

JOBBERS—Write for attractive discounts. Comparison will prove the Noble Heater is the best and most efficient obtainable.

Manufactured by

THE NOBLE HEATER COMPANY
Fort Wayne, Ind., U. S. A.

C. N. & F. W. JONAS

Atlanta
San Francisco
Dallas
Winnipeg, Can.

Sales Representatives
608 SO. DEARBORN ST.
CHICAGO, - - ILL.

Los Angeles
New York
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The only trade-marked tube patch. Made of pure white Para gum rubber. Fully proven and guaranteed.

A patch of highest quality. Will remain fresh for almost two years before use.

Las-Stik
TUBE PATCH
THE ORIGINAL Patch with a S-T-R-E-T-C-H

What Las-Stik Is.

LAS-STIK is the strongest tube patch made, having a breaking test record of 2600 lbs. and a heat test record of 250 degrees. Las-Stik is 3-64 in. thick, which is the same as the average inner tube, and weighs 4 pounds per square yard. Stretched to full capacity and nicked with a scissors in several places, this patch will not tear.

What Las-Stik Does.

Las-Stik repairs permanently any tube leak from the smallest puncture to a 17 in. blowout. When a tube having a Las-Stik Patch is inflated, the stretch and pull-back of the patch is about equal to the stretch and pull-back of the tube itself. Thus the Las-Stik, Patch soon vulcanizes itself in and becomes an inseparable part of the tube, lying flat and smooth during the life of the tube.

Conveniently Carried and Easily Applied.

Las-Stik is made in three sizes and packed in round screw top containers conveniently carried in any tool kit or door pocket. Anyone can easily apply Las-Stik in a few moments, after which the tube is ready for immediate use. The cost to seal a small puncture forever is about one cent.

LAS-STIK PATCH MFG. CO., HAMILTON, O.

Export Office:
Las-Stik Patch Manufacturing Company
1227 Broadway, New York City

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PATCHES, Tire Repair (Continued)

Moco Co. of America, 13th & Santa Fe Sts., Oklahoma City, Okla. "Monkey Grip."

Money-Back Laboratories, 5 N. Dewey St., Oklahoma City, Okla.

Monkey Grip—See Moco Co. of America.

Mormiles Co., 416 Sherman St., Chicago, Ill. "Eagle Grip."

Nation Co., 332 W. 16th St., Los Angeles, Cal. (See page 1141.)

National Rubber & Specialties Co., 4422-29 Chickering Ave., Cincinnati, O. "Red Cross."

Newark Rubber Co., Schley St., Garfield, N. J.

Northwestern Chemical Co., 785 State St., Marietta, O. "Rubrback." (See page 277.)

Okeh Spee-D—See Hadley Bros.-Uhl Co.

O'Neil—See Amazon Rubber Co.

Peerless—See Eno Rubber Co.

Pennsylvania Rubber Co., Jeannette, Pa.

Perma-Loc Mfg. Co., Wilkes-Barre, Pa. (See page 695.)

Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn.

Perry Auto Co., 209 Seventh St., Pittsburgh, Pa. "Security."

Phoenix Laboratories, 704 Polk St., San Francisco, Cal. "Apache."

Pioneer Rubber Products Co., Michigan Ave. & Kansas St., St. Louis, Mo.

Polson Rubber Co., Doan Ave. & Nickel Plate R. R., Cleveland, O. "Bull Dog," "Hold-Fast."

Porcupine—See Auto Boot Mfg. Co.

Pronto Mfg. & Sales Co., 706 S. 24th St., Omaha, Neb.

Quaker City Rubber Co., 629 Market St., Philadelphia, Pa.

Quick-Fix Tire Patch Co., 423 Good Blk., Des Moines, Ia. "Miller's."

Quick-Tite Patch Co., 20 Market St., Amsterdam, N. Y.

Racine Rubber Co., Asylum Ave., Racine, Wis.

Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.

Red Line, Inc., Grand Rapids, Mich. (See page 1047.)

Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.

Rie-Nie—See Durkee-Atwood Co.

Rubrback—See Northwestern Chemical Co.

Red Cross—See National Rubber & Specialties Co.

Rub-R-Bak—See American Automobile Accessories Co.

Ryden Supply Co., 202 E. Lake St., Minneapolis, Minn. "Shurstik."

S-V—See Williams Mfg. Co.

St. Louis Rubber Cement Co., 3046 Lambdin Ave., St. Louis, Mo. "Griptite."

Seal-Fast—See Bowes Co.

Security—See Perry Auto Co.

Shoorgrip—See Henkins, A. C.

Soo-Grip—See Esner Mfg. Co.

Spencer Co., W. E., 1 Park Pl., New York, N. Y. "Vulpa."

Sta-Tite—See Doerner & Co.

Stearns Rubber Products Co., 179 W. Washington St., Chicago, Ill. "Kantkumoff."

Stephens Rubber Co., A. J., 1426 Chestnut St., Kansas City, Mo.

Stictite—See Mengo Products Co.

Stitch-in-Time—See Wood Co.

Stuck-Tite—See Auto Specialty Mfg. Co.

Styx—See Dickard-Marx Rubber Co.

Super-Vulcanizer Mfg. Co., South West Temple, Salt Lake City, Utah. "Jumbo." (See page 1049.)

Superior Fabric Patch Co., Midlothian, Tex. "Lox-It."

Sure-Seal—See Van Cleef Bros.

Sure-Stay—See Torkelson Mfg. Co.

Sure-Tite Mfg. Co., Midlothian, Tex. "Black."

Surestik—See Ryden Supply Co.

Tiger Grip—See Caplan Bros.

Tingley & Co., Chas. O., Ross St. & St. Geo. Ave., Rahway, N. J.

Torkelson Mfg. Co., 414 Selby Ave., St. Paul, Minn. "Sure-Stay."

Triangle Rubber Co., Oklahoma City, Okla.

Twentieth Century Tire Protector Co., Midlothian, Tex.

United States Tire Co., 1790 Broadway, New York, N. Y.

Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Sure-Seal."

Vitalic—See Continental Rubber Works.

Voorhees Rubber Mfg. Co., 20-56 Bostwick Ave., Jersey City, N. J. "Arlington."

Vul-Tex Mfg. Co., 140 E. Lake St., Minneapolis, Minn.

Vulca Laboratories, 143 Second St., San Francisco, Calif.

Vulco—See Gates Rubber Co.

Vulco-Visco—See Hall-Thompson Co.

Vulkless—See American Automobile Accessories Co.

Vulpa—See Spencer Co.

Vultite Rubber Co., Bridgeport, Conn.

Wedco—See Edelstone Fabric Co.

Williams Mfg. Co., 1800 Carman St., Camden, N. J. "S.-V."

Wood Co., W. C. 105-07 Western Ave., Minneapolis, Minn. "Everloc," "Stitch-in-Time."

Yankee Grip—See Boggs Co.

Zip—See Lockwood Mfg. Co.

Zip—See 4-A Products Co.

Zip Mfg. Co., (Rosedale) Kansas City, Mo.

PATCHES, Top Repair

(For repairing mohair or other fabric tops)

Auto Products Mfg. Co., Buffalo, N. Y "Rub-R-Tite." (See page 225.)

Auto Specialties Mfg. Co., Buffalo, N. Y. "Beats-All." (See page 1193.)

Beats-All—See Auto Specialties Mfg. Co.

Cementon—See Perkins-Campbell Co.

Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Stik-Tite."

Craft—See Wood-Craft Co.

Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributor for Stik-Tite Patches.) (See page 1187.)

Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. "Cementon." (See page 317.)

Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.

Rub-R-Tite—See Auto Products Mfg. Co.

Stik-Tite—See Cincinnati Auto Specialty Co

Wood-Craft Co., 1486 Marshall Ave., St. Paul, Minn. "Craft."

PATCHING BUFFERS—See Buffers, Tube Patching

PATCHING CEMENT—See Cement, Tire Repair

PATENT ATTORNEYS—See Attorneys, Patent

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P. A. Geier Company

Machine Work to Order

105th Street and Elk Avenue

Cleveland - Ohio

Fidelity Mills

Cleaning

Textiles-Cloths

Polishing

THE J. MILTON HAGY WASTE WORKS

PHILADELPHIA

PERMA-LOC PRODUCTS

Perma-Loc Patch

Fabric Backed or Rubber Backed

Priced right and stocked by most jobbers and dealers in the East.

Four Sizes
50c
$1.00
1.50
6.00

Perma-Loc Dam-A-Leak

A liquid radiator cement. Saves the motorist time and money.

Retail 75c

High grade moulded and cured, all new fabric Blowout patch.

Perma-Loc Top Dressing

For dyeing and waterproofing automobile tops of every material. Retail 95c pint, $1.65 qt., ½ gal. $3.

Radiator Cement (Powder)			75c
Carbon Remover	60c	$1.00	$1.50
Rubber Putty Kit			65c
Valve Grinding Compound, 4 oz. double end, coarse and fine			35c
One Pound cans, coarse or fine			$1.00
Mechanics special, fast cutting, 1¾ pounds net			$1.50
Radiator Cleaner			50c
Patching Cement	10c	15c	40c
Rim and Gasket Cement	20c	50c	85c
In quarts			$1.50
In gallons			$4.00

If your Jobber does not stock our goods you may order direct from us, giving Jobber's name.

Perma-Loc Manufacturing Co.
Wilkes-Barre, Penna.

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PATENT BROKERS—See Brokers, Patent

PATTERN MAKERS

Acme Pattern Works, Fourth & Porter Sts., Detroit, Mich. (See page 421.)

Acme Pattern & Machine Co., 1553-59 Niagara St., Buffalo, N. Y.

Acme Steel & Malleable Iron Works, 245 Military Rd., Buffalo, N. Y.

Banner Pattern Co., Columbus, O.

Beatty Co., J. M., Imperial-Power Bldg., Pittsburgh, Pa.

Bilt-Rite—See Keystone Pattern Works.

Brighton Pattern Co., Beaver Falls, Pa.

Bronx Pattern & Model Works, 147 E. 126th St., New York, N. Y.

Buffalo Pattern Works, 830 Hirtel Ave., Buffalo, N. Y.

Cameron & Kaulfers Co., 56 Marshall St., Elizabeth, N. J.

Central Pattern Works, 1382 Market Ave., S., Canton, O.

Central Service Corp., 1607 Merchants' Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 345.)

Chester Pattern Co., Chester, Pa.

Cleveland Castings Pattern Co., 1930 E. 61st St., Cleveland, O.

Cohoes Iron Foundry & Machine Co., 87 Van Rensselaer St., Cohoes, N. Y.

Collamer Machine Works, 1214 E. 152d St., Cleveland, O.

Des Moines Pattern & Model Works, 121 E. Walnut St., Des Moines, Ia.

Edam Pattern Co., G. A., 3123 Scranton Rd Cleveland, O.

Elizabeth Pattern Works, Fourth & Livingston Sts., Elizabeth, N. J.

Emmert Mfg. Co., W. Main St., Waynesboro, Pa.

Eppenbach, Wm., 231 Vernon Ave., Long Island City, N. Y.

Forster Pattern Works, J. G., 148 S. Delaware St., Indianapolis, Ind.

Griffin & Co., Henry C., 143-54 Varick St., New York, N. Y.

Gumphert & Sons Co., George A., 240-42 Cherry St., Philadelphia, Pa.

Hartford Pattern & Model Co., Hartford, Conn.

Hawkeye Pattern Works, 707 W. Second St., Davenport, Ia.

Hunter Co., Thomas J., 310-16 N. 11th St., Philadelphia, Pa.

Jessup Pattern Works, Stephen C., 245-65 Roosevelt Ave., Salem, O.

Jurack Pattern Works, Chas., 600 S. Pierce St., Milwaukee, Wis.

Keystone Pattern Works, 1307 Jackson St., Omaha, Neb. "Bilt-Rite."

Kunst Co., John, 43 Murray St., New York, N. Y.

La Crosse Pattern Works, La Crosse, Wis.

Liberty Tool & Gauge Works, 338 Bernon St., Woonsocket, R. I.

Locke Pattern Works, 217-21 Woodward Ave., **Detroit, Mich.**

Louisville Pattern Works, 119 N. Fourth Ave., Louisville, Ky.

Martini & Huneke Co. of America, 1201 Hudson St., Hoboken, N. J.

Messenger, George T., 609 W. Cambria St., Philadelphia, Pa.

Michigan Pattern & Machine Works, 2429-39 E. Jefferson Ave., Detroit, Mich.

Milwaukee Pattern & Mfg. Co., 1195-99 30th St., Milwaukee, Wis.

Modern Pattern & Machine Co., 451-53 Monroe St., Detroit, Mich.

Mt. Penn Pattern Works, 318 Court St., Reading, Pa.

Nobach Pattern Works, W. J., 411-13 S. Clinton St., Chicago, Ill.

North Dayton Pattern Works, (N. Dayton), Dayton, O.

Paramount Pattern & Model Works, 302-04 McDougal St., Brooklyn, N. Y.

Pattern & Castings Co., Saginaw, Mich.

Peerless Pattern & Body Co., 1754 Main St., Buffalo, N. Y.

Peerless Pattern Works, 405 E. Madison St., South Bend, Ind.

Phillips, W. H., Exposition Bldg., Cambridge, Mass.

Remmers Pattern Co., 919 Benton St., St. Louis, Mo.

Reynolds & Currie, 141 Maple St., Waterbury, Conn.

Ritter Pattern & Wood Working Co., **232 Canal St., New York, N. Y.**

Sandusky Pattern Co., King & Monroe Sts., Sandusky, O.

Sharp Bros., 39 Cottage St., Bayonne, N. J.

Smith & Co., E. M., Peoria, Ill.

Sonith Pattern Works, 212-214 S. Pennsylvania St., Indianapolis, Ind.

Standard Pattern Works, 688 E. Fort St., Detroit, Mich.

Standard Pattern Works, 614 W. 12th St. Erie, Pa.

Standard Pattern Works, York, Pa.

Standard Pattern Works Co., 5337 St. Clair Ave., Cleveland, O.

Stanley Foundry Co., North St. & Davis Ave., N. W., Grand Rapids, Mich.

Thorn Machine Tool Works, 107 N. Franklin St., Syracuse, N. Y.

Turner, Ira B., Amber & Dauphin Sts., Philadelphia, Pa.

Victor Tool Co., Waynesboro, Pa.

Wallace & Co., John D., 1401-05 W. Jackson Blvd., Chicago, Ill.

Western Pattern & Mfg. Co., 1213 Washington Ave., Racine, Wis.

PATTERNMAKERS' LATHES—See Lathes, Woodworking

PATTERNMAKERS' VISES — See Vises, Woodworkers'

PAY CHECKS—See Checks, Brass Time, Tool and Pay

PEDAL ENGINE STARTERS—See Starters, Manual

PEDAL EXTENSIONS—See Extensions, Pedal

PEDAL GRIPS—See Grips, Pedal

PEDAL LOCKS FOR FORDS—See Locks, Pedal

PEDAL PADS—See Grips, Pedal

PEDAL PLATES—See Plates, Heel, Pedal or Step

PEDAL SHIELDS FOR FORDS—See Deflectors, Heat

PEDAL STARTERS—See Starters, Manual

PEDAL STOPS — See Stops, Pedal for Fords

PEDALS, ACCELERATOR—See Pedals, Special Accelerator

PEDALS, ACCELERATOR, FOR FORDS—See Accelerators, Foot

PEDALS, CUT-OUT—See Pedals, Horn and Cut-Out

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PEDALS, Horn and Cut-Out

Attwood Brass Works, Grand Rapids, Mich. (See page 1195.)

Au-To Compressor Co., Wilmington, O. "Oro."

Barco Mfg. Co., 212-22 W. Illinois St., Chicago, Ill.

Brewer-Titchener Corp., Cortland, N. Y. (See page 567.)

Cassidy Co., Inc., Edward A., 23 W. 43d St., New York, N. Y. (Sales Department for G. Piel Co., Long Island, N. Y.) (See page 87.)

Cooper Mfg. Co.—See Fulton Co.

Cox Brass Mfg. Co., Albany, N. Y. (See page 261.)

Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.

Emco Mfg. Co., 4 Griswold St., Binghamton, N. Y. (See page 497.)

Ewald—See Zinke Co.

Fulton Co., Dept. S., 75th & National Aves., Milwaukee, Wis. (Sole Distributors for Cooper Mfg. Co., Marshalltown, Ia.) (See page 1036.)

Gabriel Mfg. Co., 1421 E. 40th St., Cleveland, Ohio.

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 174 and 175.)

Gray-Hawley Mfg. Co., 3123-31 Jefferson Ave., E., Detroit, Mich.

Larimer Co., 62 N. La Salle St., Aurora, Ill.

Medina Stamping & Machine Co., 317 Main St., Medina, N. Y.

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

Oro—See Au-To Compressor Co.

Petry Co., N. A., 328 N. Randolph St., Philadelphia, Pa.

Piel Co.—See Cassidy Co.

Romort Mfg. Co.—See Zinke Co.

Stryker, C. W., 240 Shonnard St., Syracuse, N. Y.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

Whitehouse Mfg. Co., 42 Elm St., Newark, N. J. (See page 637.)

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Romort Mfg. Co., Oakfield, Wis. "Ewald.")

PEDALS, Motorcycle

Ramsdell Specialty Co., 667 W. Boylston St., Worcester, Mass.

Torrington Co., Torrington, Conn.

PEDALS, MUFFLER CUT-OUT—See Pedals, Horn and Cut-Out

PEDALS, RATCHET—See Pedals, Horn and Cut-Out

PEDALS, Special Accelerator

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 174 and 175.)

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. "Imperial-Wixon." (See page 177.)

Imperial-Wixon—See Imperial Brass Mfg Co.

Mahr Specialty Co., 910 13th Ave., S. E., Minneapolis, Minn.

PENNANT HOLDERS—See Holders, Flag, Pennant and Emblem

PENNANTS AND FLAGS—See Flags, Pennants and Emblems

PERIODICALS—See Books and Periodicals.

PET COCK OPENERS FOR FORDS—See Wrenches, Oil Cock

PET COCKS—See Cocks

PHOSPHOR BRONZE WIRE—See Wire, Phosphor Bronze

PHOSPHORESCENT COMPOUNDS—See Paints, Luminous

PHOSPHORESCENT PAINTS—See Paints, Luminous

PICKING MACHINES—See Machines, Hair Picking

PICNIC TABLES—See Tables, Picnic and Lunch

PINIONS, FIBRE—See Gears and Pinions, Rawhide

PINIONS, METAL—See Gears and Pinions, Metal

PINIONS, RAWHIDE—See Gears and Pinions, Rawhide

PINIONS, SPEEDOMETER—See Gears and Pinions, Speedometer

PINS, Aircraft Clevis

Erie Specialty Co., Erie, Pa.

PINS, Cotter

American Chain Co., Bridgeport, Conn. "Campbell." (See page 535.)

American Cotter Pin Co., Park Bldg., Pittsburgh, Pa. "Kelkotters."

Automotive Supply Mfg. Co., 2005½ Main St., Dallas, Tex.

Brooks & Sons, M. S., Chester, Conn.

Campbell—See American Chain Co.

Cobb & Drew, Plymouth, Mass.

Empire City Screw Products Co., 12 W. 62d St., New York, N. Y. (Assortments only.) (See page 659.)

Falls Rivet Co., Kent, O.

Hindley Mfg. Co., John St., Valley Falls, R. I.

Hobbs Mfg. Co., 26 Salisbury St., Worcester, Mass.

Hubbard Spring Mfg. Co., Pontiac, Mich. (See page 957.)

Kelkotters—See American Cotter Pin Co.

McWhorter Mfg. Co., Riverton, N. J.

National Screw & Tack Co., 2440 E. 75th St., Cleveland, O.

Saco—See Smith & Co.

Smith & Co., F. P., Sharon Hills, Pa. "Saco."

Western Wire Products Co., 324-26 S. Third St., St. Louis, Mo.

Whitaker Mfg. Co., Chicago, Ill. (See page 1177.)

Wire Goods Co., 28 Union St., Worcester, Mass.

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Here is a belt that has eliminated those annoyances so common in other belts — such as stretching, slipping, breaking, etc.

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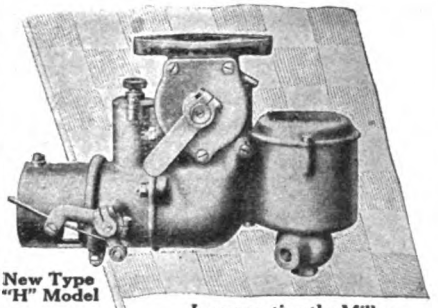

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Extremely economical to operate. Prolongs the life of the battery.

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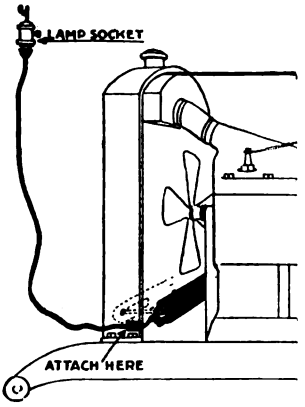

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PINS, Crank Ratchet for Fords

Al-Fountaine Co., Millbury, Mass.
Allied Steel Products Co., 7 Walnut St., Aurora, Ill. "Sta-Tite."
American Auto Products Co., 1319 L St., N. W., Washington, D. C. "Jiffy."
Jiffy—See American Auto Products Co.
Sta-Tite—See Allied Steel Products Co.

PINS, DRIFT—See Punches, Center, Prick and Drift

PINS, Escutcheon

American Steel & Wire Co., Chicago, Ill. (See page 829.)
Atlas Tack Corp., Fairhaven, Mass.
Blake & Johnson Co., Waterbury, Conn. (See page 847.)
Corbin Screw Corp., High St., New Britain, Conn.
Hassall, John, Clay & Oakland Sts., Brooklyn, N. Y. (See page 701.)
Star—See Turner & Seymour Mfg. Co.
Stimpson Co., Edwin B., 70 Franklin Ave., Brooklyn, N. Y.
Turner & Seymour Mfg. Co., Lawton St., & R. R., Torrington, Conn. "Star."
Waterbury Mfg. Co., 236 Grand St., Waterbury, Conn.
Wire Goods Co., 28 Union St., Worcester, Mass.

PINS, Piston

(See also Machine Work; also Screw Machine Products)

Allospar—See Alloy Parts Mfg. Co.
Alloy Parts Mfg. Co., Canton, Mass. "Allospar."
Arizona Machinery Mfg. Co., 222-26 N. Seventh Ave., Phoenix, Ariz.
Ashley Machine Works, 724 University Ave., Rochester, N. Y.
B-N—See Burgess-Norton Mfg. Co.
Bu-Nite—See Butler Mfg. Co.
Burgess-Norton Mfg. Co., Geneva, Ill. "B-N." (See page 735.)
Butler Mfg. Co., 3234 W. Washington St., Indianapolis, Ind. "Bu-Nite."
Central Machine Works, 19 Church St., Worcester, Mass. (See page 1021.)
Club Auto Parts & Machine Co., 204-06 Chester St., Buffalo, N. Y.
Detroit Machine Tool Co., 6443 St. Antoine St., Detroit, Mich.
Detroit Motor Parts Co., 133-35 W. Larned St., Detroit, Mich. (See page 551.)
Detroit Screw Works, 1494 Franklin St., Detroit, Mich.
Dyer Co., G. H., 155 Brookline Ave., Cambridge, Mass.
Green Engineering Co., Main St. & Burns Ave., Dayton, O.
Houpert Machine Co., Harris Ave. & Marion St., Long Island City, N. Y. (See page 707.)
Landis & Sons, A. B., (Chestnut Hill) Philadelphia, Pa.
Lincoln Machine Co., 1068 Main St., Pawtucket, R. I.
Lyon Co., Edward F., 1600-34 E. Euclid Ave., Detroit, Mich.
Machine Specialty Co.—See Patterson- Burrows Co.
Marquette Metal Products Co., 6545 Carnegie Ave., Cleveland, O.
Millholland Machine Co., W. 23rd & Belt. R. R., Indianapolis, Ind.
Motor City Parts Co., 908 Philadelphia St. W., Detroit, Mich.
National Steel Products Co., 2270 Franklin St., Detroit, Mich.
Neupert Mfg. Co., 82 Lark St., Buffalo, N. Y. (See page 341.)
Newark Motor Products Mfg. Co., Newark, N. J.
New Britain Machine Co., Chestnut St., New Britain, Conn.
Nilson-Miller Co., 1300-06 Hudson St., Hoboken, N. J.
Noonan Mfg. Co., D. R., Paris, Ill.
Patterson-Burrows Co., 1607 Kresge Bldg., Detroit, Mich. (Sole Distributors for Machine Specialty Co., Ann Arbor, Mich.)
Peninsular Milled Screw Co., 6910 E. Lafayette St., Detroit, Mich.
Recording Devices Co., 554 W. Fifth St., Dayton, O.
Sherman-Klove Co., 4519-23 W. Harrison St., Chicago, Ill. (See page 719.)
Singer Machine Works, Joe, 2116 S. Los Angeles St., Los Angeles, Cal.
Spacke Machine & Tool Co., 600 Madison Ave., Indianapolis, Ind.
Standard Automatic Tool Co., Racine, Wis.
Standard Gear Co., 5930 Commonwealth Ave., Detroit, Mich.
Taylor Mfg. Co., 10 Portland St., Cambridge, Mass.
Trindl Co., Wabash Ave. and 29th St., Chicago, Ill. (See page 341.)
Turner Machine & Mfg. Co., 31st & Genesee Sts., Kansas City, Mo.
U. S. Hammered Piston Ring Co., 1206 S. Grove St., Irvington, N. J.
Wadell Motor Corp., 661-71 Freylinghuysen Ave., Newark, N. J.
Wainwright Engineering Corp., Connersville, Ind. (See page 705.)
Waterbury Welding Co., 1147 South Main St., Waterbury, Conn. (See page 613.)
Wilcox Motor & Mfg. Co., Saginaw, Mich. (See pages 823 and 1027.)
Wisconsin Machinery & Mfg. Co., Milwaukee, Wis. (See page 837.)

PINS, Piston, for Fords

(Including both regular and special light weight pins)

Acme Mfg. Co., Boonton, N. J.
B-N—See Burgess-Norton Mfg. Co.
Bemiller Foundry & Machine Co.—See Eckhouse & Co.
Burgess-Norton Mfg. Co., Geneva, Ill. "B-N." (See page 735.)
Bu-Nite—See Butler Mfg. Co.
Butler Mfg. Co., 3234 W. Washington St., Indianapolis, Ind. "Bu-Nite."
Cincinnati Screw Co., Twightwee, O. (See page 701.)
Detroit Machine Tool Co., 6443 St. Antoine St., Detroit, Mich.
Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Sales Dept. for Bemiller Foundry & Machine Co., Bellville, O. (See page opposite Title Page.)
Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass. (See page 417.)
Motor City Parts Co., 908 Philadelphia St. W., Detroit, Mich.
Park Mfg. Co., 47 Lagrange St., Worcester, Mass. (See page 677.)

PINS, Taper

Belvidere Screw & Machine Co., E. Madison St., Belvidere, Ill.
Cassady-Fairbanks Mfg. Co., 6126 S. La Salle St., Chicago, Ill.
Chicago Nut Co., 2518-29 W. 20th St., Chicago, Ill.
Chicago Screw Co., Homan Ave. & Fillmore St., Chicago, Ill. (See pages 837 and 841.)

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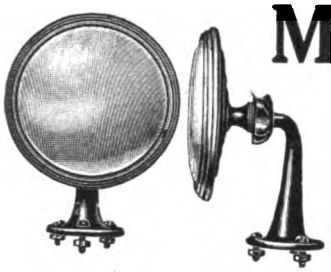

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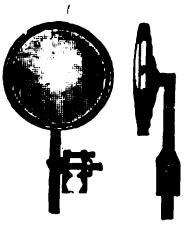

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Word of mouth advertising from satisfied users plus consistent advertising in magazines, is bringing an ever multiplying business to Giant Grip dealers. Are you getting your share? Winter is the time when sales are largest. Ask without delay for our dealer proposition.

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Dependable Screw Machine Products

Auto, Truck, Tractor and Engine Parts Furnished Complete

Service—Quality Assured

Replace Parts for Popular Cars Guaranteed to Fit

The Cincinnati Screw Co.

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PINS, Taper (Continued)

Detroit Screw Works, 1494 Fraklin St., Detroit, Mich.

Empire City Screw Products Co., 12 W. 62d St., New York, N. Y. (Assortments Only.) (See page 659.)

Ferry Cap & Set Screw Co., Scranton Rd., Cleveland, O. (See page 837.)

Gordon-Little Co., 122-24 N. Senate Ave., Indianapolis, Ind.

Hartford Machine Screw Co., Hartford, Conn. (See page 839.)

Morse Twist Drill & Machine Co., 163 Pleasant St., New Bedford, Mass.

National Sewing Machine Co., Belvidere, Ill.

Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 339.)

St. Louis Screw Co., Clarence & Bulwer Aves., St. Louis, Mo.

Screw Machine Products Corp., 1012 Eddy St., Providence, R. I.

Standard Tool Co., 6900-24 Central Ave., Cleveland, O.

U. S. Automatic Co., Amherst, O.

Western Automatic Machine Screw Co., Elyria, O. (See page 659.)

Worcester Machine Screw Co., 26 Haviland St., Worcester, Mass.

PINS, Valve Stem, for Fords

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)

PIPE, BRASS—See Tubing, Brass and Copper

PIPE FITTINGS—See Fittings, Pipe

PIPE VISES—See Vises, Pipe

PIPE WRENCHES—See Wrenches, Pipe

PIPES, BREATHER, FOR FORDS—See Breathers, Crank Case

PIPING, EXHAUST AND INTAKE—See Manifolds, Exhaust

PISTON ALIGNING JIGS—See Jigs, Piston Aligning

PISTON BUSHING REAMERS FOR FORDS—See Reamers, Piston Bushing

PISTON CLAMPS—See Vises, Piston, for Fords

PISTON PIN BUSHINGS FOR FORDS—See Bushings, Bronze

PISTON PINS—See Pins, Piston

PISTON RING COMPRESSING TOOLS—See Tools, Piston Ring

PISTON RING EXPANDING RINGS—See Rings, Piston Ring Expanding

PISTON RING GRINDERS—See Grinders, Piston Ring

PISTON RING GROOVE CLEANING TOOLS—See Tools, Piston Ring Groove Cleaning

PISTON RING TOOLS—See Tools, Piston Ring

PISTON RINGS—See Rings, Piston

PISTON VISES FOR FORDS—See Vises, Piston

PISTONS, Finished and Machined

(For Piston Castings—See Castings)

Alloys Motor Parts Mfg. Co., 313-15 Puyallup Ave., Tacoma, Wash. "Tsungani."

Aluminite—See Green Engineering Co.

Aluminum Manufacturers Corp., 6205 Carnegie Ave., Cleveland, O. "Lynite."

American Engine & Airplane Co., 2869 W. Pico St., Los Angeles, Cal. "Rite-Wate."

American Piston & Machine Co., 503-08 Garfield Ave., Detroit, Mich. (See page 621.)

Arizona Machinery Mfg. Co., 222-26 N. Seventh Ave., Phoenix, Ariz.

Arlington Machine Works, 663-74 Jenks St., St. Paul, Minn.

Auto Engine Works, University Ave. & Griggs St., St. Paul, Minn.

Automotive Products Corp., Hazleton, Pa. (See page 709.)

Bu-Nite—See Butler Mfg. Co.

Buffalo Cylinder Grinding Co., 887 Main St., Buffalo, N. Y.

Butler Mfg. Co., 3234 W. Washington St., Indianapolis, Ind. "Bu-Nite."

Clark-Turner Piston Co., 1242 S. Los Angeles St., Los Angeles, Cal. "De Luxe." (See page 703.)

Club Auto Parts & Machine Co., 204-06 Chester St., Buffalo, N. Y.

Cochran Piston Corp., Detroit, Mich. (See page 735.)

Dall Motor Parts Co., 450-56 South St., Vermillion, O.

De Luxe—See Clark-Turner Piston Co.

Detroit Auto Piston Co., 1139 Baltimore Ave., W., Detroit, Mich. (See page 707.)

Detroit Foundry Co., 2642 N. Grand Blvd., Detroit, Mich.

Ferro Machine & Foundry Co., 47 Hubbard Ave., Cleveland, O.

Foster-Johnson Reamer Co., 105 Beardsley Ave., Elkhart, Ind., (Sole Distributors for Overside Piston Co., Elkhart, Ind.)

Green Engineering Co., Main St. & Burns Ave., Dayton, O. "Aluminite."

Hall Machine & Tool Co., 116 Chestnut St., Providence, R. I.

Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass. (See page 417.)

Houpert Machine Co., Harris Ave. & Marion St., Long Island City, N. Y. (See page 707.)

Jahns, W. H., 2662 Lacy St., Los Angeles, Cal.

Kant-Skore Piston Co., 520 Mutual Life Bldg., Buffalo, N. Y. (See page 707.)

Lacey Co., Grand Rapids, Mich. (See page 527.)

Lauchin-Loehr Lubricating Piston Co., 220 Cedar St., Green Bay, Wis.

Levett Co., Walker M., 417-21 E. 23rd St., New York, N. Y. "Magnalite." (See page 705.)

Lynite—See Aluminum Castings Co.

McCadden Machine Works, 316 Sixth Ave., N., St. Cloud, Minn.

Magnalite—See Levett Co.

Marco—See Marvel Machinery Co.

Marvel Machinery Co., 13th Ave., S., & Third St., Minneapolis, Minn. "Marco." (See page 611.)

Miller Engineering & Foundry Works, 2652 Long Beach Ave., Los Angeles, Cal.

Milwaukee Cylinder Grinding Co., Humboldt & Concordia Aves., Milwaukee, Wis.

Modern Electric & Machine Co., 936-40 Fort Wayne Ave., Indianapolis, Ind. "R. & M. Maluminum."

Newark Motor Products Mfg. Co., Newark, N. J.

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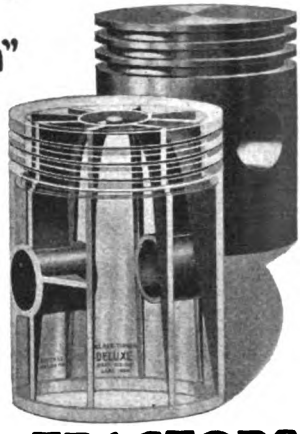
Very Strong."



"The Successful Light Weight Piston"

DE LUXE grey iron pistons are 40 to 50% lighter than stock factory cast iron pistons. The weight is saved by the scientific design. The reinforcing ribs give such unequaled strength that less metal may be used in the walls. These ribs are heat conductors making a very cool running piston with minimum expansion.

DE LUXE pistons are furnished either semi-finished or finished to standard and all over-sizes, accurately machined, and as superior in quality and workmanship as in design.

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AUTOMOBILES—TRUCKS—TRACTORS

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Arizona:
Arthur Hendey Mach. Shop, 824 West Gurley St. Prescott.

California:
Automotive Parts Co., 835 Larkin St., San Francisco.
Bakersfield Garage & Auto Supply Co., Bakersfield.
Hanford Garage, 116 W. 8th St., Hanford.
Hartman's Machine Works, Red Bluff.
A. H. Sitton, N. Spadra St., Fullerton.
Roemer, Roemer & Silva, Santa Maria.
South End Machine Works, 602 So. Main St., Porterville.
J. W. Spargur, 218 West "F" St., San Diego.
Sulpizio Machine Works, 507 Eye St., Fresno.
Watterson Bros., Inc., Bishop.
L. S. Weeks, Miner Ave. & Sutter St., Stockton.

Colorado:
Z. T. Sprigg, 1942 Arapahoe St., Denver.

Connecticut:
New Haven Machine Co., 157 Orange Ave., Allingtown District, New Haven.

Florida:
Marine Ways Machine Co., St. Petersburg.

Georgia:
Story Auto Equipment & Supply Co., 145 Edgewood Ave., Atlanta.

Hawaii:
The Pond Co., Ltd., Honolulu, T. H.

Idaho:
E. J. Stapken Cylinder Grinding Co., Twin Falls.

Illinois:
Bentley & Diehl, 224 Van Buren St., Freeport.
J. B. Koon, 5925 So. Talman Ave., Chicago.
Beaman Garage Company, 244 West Main St., Danville.

Indiana:
Homer A. Keller, 415 Capitol Ave., N., Indianapolis.
Quick Welding & Machine Co., 307 So. Second St., Terre Haute.

Iowa:
Lawson Automotive Co., 217 West 5th St., Waterloo.
DeLuxe Piston Co., Humboldt.

Kansas:
Leavenworth Motor Co., 6th & Delaware Sts., Leavenworth.
Liberal Buick Co., Liberal.
Lohmiller Garage, Salina.

Louisiana:
Bishop-Edell Mach. & Elec. Co., 436 Girod St., New Orleans.

Massachusetts:
DeLuxe Specialty Co., 176 Brookline Ave., Boston.

Michigan:
L. Lawrence & Co., 1211 Jefferson Ave., East, Detroit.

Minnesota:
Burd High Compression Ring Sales Co., 809 Hennepin Ave., Minneapolis.
Motor Equipment Co., 318 Providence Bldg., Duluth.

Missouri:
Vanguard Mfg. Co., 3939 Magnolia Ave., St. Louis.

Montana:
Franklin Garage, 201 N. 30th St., Billings.
Riverside Foundry & Machine Co., 901 Tenth Ave. N., Great Falls.

Nebraska:
C. M. Culver & Co., 6th & Ella Sts., Beatrice.

New Mexico:
R. L. Dodson & Son, 400 N. 4th St., Albuquerque.

New York:
L. Lawrence & Co., 10 Summer St., Buffalo.
Westervelt Machine Corp., 1777 Broadway, New York City.

Ohio:
L. Lawrence & Co., 6529 Euclid Ave., Cleveland.
Litters Motor Machine Shop, 240 N. 4th St., Columbus.

Oklahoma:
Max Shuler, 318 E. 4th St., Tulsa.
C. E. Vestal, 416 N. Robinson St., Oklahoma City.

Oregon:
Geo. L. Brent, Prop., Modern Mechanical Sanitorium, 101 Fifth Ave. West, Eugene.
Burns Machine Works, Inc., Cottonwood & Water Sts., Pendleton.
Fred Dundee, Broadway at Flanders, Portland.
Koonts Garage, Marshfield.

Pennsylvania:
L. Lawrence & Co., 5102 Baum Blvd., Pittsburgh.

Tennessee:
Automobile Piston Co., 456 Monroe Ave., Memphis.

Texas:
Beatty-Folsom Co., McAllen.
Lawrence Process Co., 3001 Commerce St., Dallas.
Simmonds Motor & Machine Co., 345 Pine St., Beaumont.
Smith Machine Co., 311 So. Kansas St., El Paso.
United Motors Co., 612 Louisiana St., Houston.

Utah:
Cheesman Automobile Company, 2566 Washington Ave., Ogden.

Virginia:
Stebbing & Pauli, 1 West Marshall St., Richmond.

Washington:
Burbank-Thomson Supply Co., 115 Wenatchee Ave. S., Wenatchee.
Danard Auto Machine Works, 2326 South "E" St., Tacoma.
Jack Nalder Machine Shop, 4th & Elm Sts., Walla Walla.
Robinson Gear & Machine Works, 4th Ave. at Blanchard, Seattle.
Sunset Auto Sales Co., 405 Main St., Ellensburg.

West Virginia:
The Howe Company, 2152 Main St., Wheeling.
Huntington Auto Supply Co., 938 Third Ave., Huntington.

New Zealand:
New Zealand Grinding & Gear Co., Ltd., 10 Stock Exchange Bldg., Dunedin.

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PISTONS, Finished and Machined (Continued)

Nilson-Miller Co., 1300-06 Hudson St., Hoboken, N. J.
Precision Auto Parts Co., 244 W. 49th St., New York, N. Y.
R. & M. Maluminum—See Modern Electric & Machine Co.
Rapid Rim Co., Huntington, Ind.
Ritefit—See Wright Mfg. Co.
Rite-Wate—See American Engine & Airplane Co.
Saginaw Metal Parts Corp., Williamson & River Sts., Saginaw, Mich. "Very-Lite."
Seymour Mfg. Corp., W. E., Lisbon Ave. & 31st St., Milwaukee, Wis.
Shultis Automotive Corp., 16-22 W. 61st St., New York, N. Y. (Distributors.) (See page 609.)
Spacke Machine & Tool Co., 600 Madison Ave., Indianapolis, Ind.
Spencer-Smith Machine Co., Howell, Mich. (See page 705.)
Standard Automatic Tool Co., Racine, Wis. "Staround."
Staround—See Standard Automatic Tool Co.
Storm Mfg. Co., Dept. L, Minneapolis, Minn. (See page 983.)
Taylor Mfg. Co., 10 Portland St., Cambridge, Mass.
Trindl Co., Wabash Ave. and 29th St., Chicago, Ill. (See page 341.)
Tsungani—See Alloys Motor Parts Mfg. Co.
Verylite—See Wilkie's Garage & Machine Works.
Very-Lite—See Saginaw Metal Parts Corp.
Wadell Motor Corp., 661-71 Freylinghuysen Ave., Newark, N. J.
Wainwright Engineering Corp., Connersville, Ind. (See page 705.)
Waterbury Welding Co., 1147 South Main St., Waterbury, Conn. (See page 613.)
Whitman Luvium Metal Mfg. Co., 6900 S. Broadway, St. Louis, Mo.
Wilkie's Garage & Machine Works, 208 W. Third St., Winona, Minn. "Verylite."
Wisconsin Machinery & Mfg. Co., Milwaukee, Wis. (See page 837.)
Wridgway Co., Hallstead, Pa. "Zephyr." (See page 731.)
Wright Mfg. Co., 11 Second St., S. E., Minneapolis, Minn. "Ritefit."
Zephyr—See Wridgway Co.

PISTONS, Special Light Weight, for Fords

(Including aluminum and aluminum alloy pistons)

Am-pe-Co—See American Machine Products Co.
American Engine & Airplane Co., 2869 W. Pico St., Los Angeles, Cal. "Rite-Wate."
American Machine Products Co., Marshalltown, Iowa. "Am-pe-Co."
American Piston & Machine Co., 502-08 Garfield Ave., Detroit, Mich. (See page 621.)
Automotive Products Corp., Hazleton, Pa. (See page 709.)
Bemiller Foundry & Machine Co.—See Eckhouse & Co.
Brodrib Bros., 59 Congress St., Hartford, Conn.
Bu-Nite—See Butler Mfg. Co.
Butler Mfg. Co., 3234 W. Washington St., Indianapolis, Ind. "Bu-Nite."
Clark-Turner Piston Co., 1242 S. Los Angeles St., Los Angeles, Cal. (See page 703.)
Cochran Piston Corp., Detroit, Mich. (See page 735.)
Dall Motor Parts Co., 450-56 South St., Vermillion, O.
Doane Machine Co., Waltham, Mass.
Depuy Bros., Canterbury, N. H.
Dow Chemical Co., Midland, Mich.
Dyer Co., G. H., 155 Brookline St., Cambridge, Mass.
Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Sales Dept. for Bemiller Foundry & Machine Co., Bellville, O. (See page opposite Title Page.)
K-P—See Keys Piston Ring Co.
Kant-Skore Piston Co., 520 Mutual Life Bldg., Buffalo, N. Y. (See page 707.)
Keys Piston Ring Co., 3020 Olive St., St. Louis, Mo. "K-P." (See page 1185.)
Lacey Co., Grand Rapids, Mich. (See page 527.)
Lauchin-Loehr Lubricating Piston Co., 220 Cedar St., Green Bay, Wis.
Levett Co., Walker M., 417-21 E. 23d St., New York, N. Y. (See page 705.)
Litewate—See Western Pump Co.
Lynite—See McQuay-Norris Mfg. Co.
M & P Co., Saranac Lake, N. Y.
McCadden Machine Works, 316 Sixth Ave., N., St. Cloud, Minn.
McQuay-Norris Mfg. Co., 2808 Locust St., St. Louis, Mo. "Lynite."
Magnelite—See Sunderland Machine Shops.
Modern Electric & Machine Co., 936-40 Fort Wayne Ave., Indianapolis, Ind. "R & M Maluminum."
Noonan Mfg. C., D. R., Paris, Ill.
R & M Maluminum—See Modern Electric & Machine Co.
Rite-Wate—See American Engine & Airplane Co.
Saginaw Metal Parts Corp., Williamson & River Sts., Saginaw, Mich. "Very-Lite."
Seymour Mfg. Corp., W. E., Lisbon Ave. & 31st St., Milwaukee, Wis.
Speedway Engineering Co., 910 N. Illinois St., Indianapolis, Ind. (See page 1133.)
Spencer-Smith Machine Co., Howell, Mich. (See page 705.)
Sunderland Machine Shops, Omaha, Neb. "Magnalite." (See page 341.)
Western Pump Co., Front & Gaines Sts., Davenport, Ia. "Litewate."
Whitman Luvium Metal Mfg. Co., 6900 S. Broadway, St. Louis, Mo.

PLANER CHUCKS—See Chucks, Planer

PLANER TOOL HOLDERS—See Holders, Lathe and Planer Tool

PLANER TOOLS—See Tools, Lathe and Planer

PLANERS, Metal

American Tool Works Co., Pearl St. & Eggleston Ave., Cincinnati, O.
Betts Machine Co., Rochester, N. Y.
Cincinnati Planer Co., 3120 South St. (Oakley), Cincinnati, O.
Cincinnati Shaper Co., Elam St. & Garrard Ave., Cincinnati, O.
Cleveland Planer Co., 3148 Superior Ave., Cleveland, O.
Gray Co., G. A., Gest & Depot Sts., Cincinnati, O.
Hamilton Machine Tool Co., Hamilton, O.
Niles-Bement-Pond Co., 111 Broadway, New York, N. Y. "Pond."
Ohio Machine Tool Co., Kenton, O.
Pond—See Niles-Bement-Pond Co.
Powell Machine Co., 243 Stafford St., Worcester, Mass.
Putnam Machine Co., Newton Pl., Fitchburg Mass.
Rockford Machine Tool Co., 2400 Kiswaukee St., Rockford, Ill.
Stapf & Co., John B., Dunkirk, N. Y.

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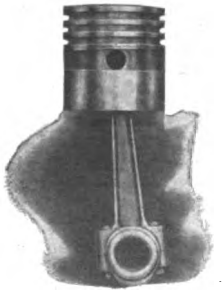

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PLANERS, Metal (Continued)

Very-Lite—See Saginaw Metal Parts Corp.
Whitcomb-Blaisdell Machine Tool Co., 53 Franklin St., Boston, Mass.
Woodward & Powell Planer Co., Webster St. & B. & A. R. R., Worcester, Mass.
American Wood Working Machinery Co., 591 Lyell Ave., Rochester, N. Y.
Bentel & Margedant Co., Hamilton, O.
Connell & Dengler Machine Co., Allen & Platt Sts., Rochester, N. Y.
Cordesman, Meyer & Co., 53-57 Center Ave., Cincinnati, O.
Cordesman-Rechtin Co., 215 Butler St., Cincinnati, O.
Crescent Machine Co., Leetonia, O.
Defiance Machine Works, 424 Perry St., Defiance, O.
Falls Machine Co., Sheboygan Falls, Wis.
Fay & Egan Co., J. A., Cincinnati, O.
Hall & Brown Woodworking Machine Co., Broadway & Ninth St., St. Louis, Mo.
Hermance Machine Co., 178 Campbell St., Williamsport, Pa.
Kane & Roach, Niagara & Shonnard Sts., Syracuse, N. Y.
Oliver Machinery Co., 1025 Clancy St., N. E., Grand Rapids, Mich.
Porter Machinery Co., C. O., 606-08 Front Ave., N. W., Grand Rapids, Mich.
Power & Co., L., 20 S. 23rd St., Philadelphia, Pa.
Pryibil Machine Co., P., 512-24 W. 41st St., New York, N. Y.
Schneider & Goosman Machine Co., Cincinnati, Ohio.
Smith Machine Co., H. B., Smithville, N. J.
Wallace & Co., J. D., 1401-05 W. Jackson Blvd., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass. (See pages 477 and 853.)
Yates Machine Co., P. B., Beloit, Wis.

PLANES, SEA—See Section I

PLANETARY GEARS—See Gears, Transmission

PLANS, Dealer Merchandising

Munn Co., J. O., Bank of Commerce Bldg., Toledo, O. (See page 61.)

PLANTS, Farm Lighting

A-C Electrical Mfg. Co., U. B. Bldg., Dayton, Ohio.
Alamo Farm Light Co., Tower Bldg., Chicago, Ill.
Automatic Light Co., Ludington, Mich. "Holt." (See page 513.)
Bishop & Son Co., A. L., Fargo, N. Dak. "Gate City Lite."
Delco—See Domestic Engineering Co.
Domestic Engineering Co., Dayton, O. "Delco."
Electric Auto-Lite Corp., Toledo, O. "Willys."
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Fort Dearborn Mfg. Co., Sterling, Ill.
Gate City Lite—See Bishop & Son Co.
Genco—See General Gas Electric Co.
General Gas Electric Co., Seventh & Middle Sts., Hanover, Pa. "Genco."
Globe Electric Co., 368 Broadway, Milwaukee, Wis.
Holt—See Automatic Light Co.
Independent Light & Power Co., Oelwein, Ia.
Jupiter—See Perfection Storage Battery Co.
Kewanee Private Utilities Co., Franklin St., Kewanee, Ill.
Kohler Co., Kohler, Wis.
Lalley Light Corp., 3171 Bellevue Ave., Detroit, Mich.
Langstadt-Meyer Co., 767 College Ave., Appleton, Wis.
Lauson-Lawton Co., 530 Brown St., De Pere, Wis.
Litscher Lite Corp., 1140 Monroe Ave., Grand Rapids, Mich.
Main Electric Co., Cleveland, O.
Marco Light & Power Corp., 2430 Michigan Ave., Chicago, Ill.
Matthews Engineering Co., 460 Monroe St., Sandusky, O. (See page 389.)
Mayhew Co., Milwaukee, Wis.
Merritt Co., S. Whyle, 516 Fifth Ave., New York, N. Y.
National Electric Lighting Co., Wilton Junction, Iowa.
Ohio Electric Works, 6304-06 Ellen Ave., N. W., Cleveland, O.
Perfection Storage Battery Co., 500 E. 40th St., Chicago, Ill. "Jupiter."
Petroleum Engine & Mfg. Co., 120 Broadway, New York, N. Y.
Radiant Mfg. Co., Ferry & Water Sts., Sandusky, O.
Recco—See Rural Electric Equipment Co.
Regal Gasoline Engine Co., 59 W. Pearl St., Coldwater, Mich. "Regalite."
Regalite—See Regal Gasoline Engine Co.
Rural Electric Equipment Co., Canton, Pa. "Recco."
Stearns Motor Mfg. Co., Ludington, Mich.
Sturtevant Co., B. F., Hyde Park, Boston, Mass.
Suburban Lighting Co., Toledo, O.
Superior Engineering Co., 332 Third Ave., Pittsburgh, Pa.
Universal Products Co., Oshkosh, Wis.
Warnerlite Products Corp., Davenport, Iowa. (See page 325.)
Willys—See Electric Auto-Lite Corp.
Worthington Pump & Machinery Corp., 106 Holthoff Pl., Cudahy, Wis.

PLATE GLASS—See Glass, Polished Plate

PLATES, Airplane Wing Socket

Barcalo Mfg. Co., 225 Louisiana St., Buffalo, N. Y.

PLATES, Demountable Rim Wedge

(Small stamped Plates or Shims to be used under rim wedges to ensure their tightness)

American Auto Products Co., 1319 L St., N. W., Washington, D. C.
Hykon Mfg. Co., 153 E. State St., Alliance, O.

PLATES, Differential Assembly, for Fords

Hinckley-Myers Co., Jackson, Mich.

PLATES, Heel, Pedal or Step

Cushion Pedal Co., 400-32 N. Ave. 19, Los Angeles, Cal. (See page 481.)
General Etching & Mfg. Co., 312 S. Hamilton Ave., Chicago, Ill.
Hipco Mfg. Co., 34 Columbus Ave., Boston, Mass.

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PLATES, Heel, Pedal or Step (Continued)

Humboldt—See Republic Auto Parts Co.

Republic Auto Parts Co., 31-35 Tenth St., Long Island City, N. Y. "Humboldt."

Spiro Mfg. Co., C., 68-72 E. 131st St., New York, N. Y. "Uniq."

Stanwood Equipment Co., 308 N. Michigan Blvd., Chicago, Ill. (See page 91.)

Sure-Step Auto Mat Co., 12-14 Canal St., Boston, Mass.

Tyler Mfg. Co., 755 Boylston St., Boston, Mass.

Uniq—See Spiro Mfg. Co.

PLATES, Name

Abbott, W. H., 46 Greenwich Ave., New York, N. Y.

American Name Plate Co., 352 Atlantic Ave., Boston, Mass.

Balzer Co., Gus, New York American Bldg., New York, N. Y.

Bastian Bros. Co., 69 Mt. Hope Ave., Rochester, N. Y.

Blackinton & Co., V. H., 140 Commonwealth Ave., Attleboro Falls, Mass.

Bernard Co., J., 422-30 E. 53d St., New York, N. Y.

Chandler Co., Napier St., Springfield, Mass.

Childs & Co., S. D., 136 S. Clark St., Chicago, Ill.

Chippewa Bronze Co., 1469 E. 118th St., Cleveland, O.

Colgan Co., J. W., 4 Alden Ct., Boston, Mass.

Crowe Name Plate & Engraving Co., 1749 Grace St., Chicago, Ill. (See page 709.)

Detroit Name Plate Etching Co., 143-45 Brady St., Detroit, Mich. (See page 709.)

Electro-Chemical Engraving Co., 440-58 19th St., Brooklyn, N. Y.

Etching Company of America, 1520 Montana St., Chicago, Ill.

Federal Name Plate & Novelty Co., 732 Federal St., Chicago, Ill.

Fogarty Mfg. Co., 1121 E. Second St., Dayton, O.

Fox Co., Gustave, 411-13 Race St., Cincinnati, O.

General Etching & Mfg. Co., 312 S. Hamilton Ave., Chicago, Ill.

General Metal Crafts Co., 2127 Tilden St., Chicago, Ill.

Grammes & Sons, L. F., 344 Union St., Allentown, Pa.

Greenduck Co., Van Buren & Hoyne Aves., Chicago, Ill.

Hanson Co., C. H., 178 N. Clark St., Chicago, Ill.

Highton & Sons Co., Wm., Nashua, N. H.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Matthews & Co., Jas. H., 185 Forbes Field, Pittsburgh, Pa. (See page 905.)

Metallograph Corp., Grand Central Terminal, New York, N. Y.

Mayer Co., Geo. J., 36 S. Meridian St., Indianapolis, Ind.

Murdock Co., Jas. W., 116 Opera Pl., Cincinnati, O.

National Decalcomania Co., 240 N. 60th St., Philadelphia, Pa.

National Gauge & Equipment Co., La Crosse, Wis. (See page 437.)

Ness, Jr., Geo. M., 61 Fulton St., New York, N. Y.

New York Stencil Works, 100 Nassau St., New York, N. Y.

O'Connor, James, Nevada Bldg., Cincinnati, O.

Pannier Bros. Stamp Co., 207-09 Sandusky St., Pittsburgh, Pa. (See page 905.)

Pittsburgh Stamp Co., 314 Penn Ave., Pittsburgh, Pa.

Premier Metal Etching Co., 14th St. & Van Alst Ave., Long Island City, N. Y.

Shank Sign Co., E. A., 19 Park Row, New York, N. Y.

Shepard Art Metal Co., Detroit, Mich. (See page 515.)

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.

Stafford Co., N., 87 Fulton St., New York, N. Y.

Torrey Roller Bushing Works, Bath, Me.

Turner Brass Works, Sycamore, Ill. (See page 177.)

Tyler Mfg. Co., 755 Boylston St., Boston, Mass.

Walter & Sons, N. C., 3 Park Row, New York, N. Y.

Watson Co., Mechanics St., Attleboro, Mass.

Whiteford & Co., Jos. G., 165 N. Jefferson St., Chicago, Ill.

Whitehead & Hoag Co., 272 Sussex Ave., Newark, N. J.

Wright & Son, Greg. G., 119-21 Opera Pl., Cincinnati, O.

Yeuell Co., E. V., rear 106 Pleasant Ave., Malden, Mass.

PLATES, PEDAL—See Plates, Heel

PLATES, SCREW—See Tape and Dies

PLATES, STEP—See Plates, Heel

PLATES, STORAGE BATTERY REPAIR—See Parts, Storage Battery Repair

PLATING, Brass and Nickel

Aetna Brass & Bronze Co., 1631-35 E. 55th St., Cleveland, O.

Ajax Plating & Specialty Mfg. Co., 1400 Niagara St., Buffalo, N. Y.

Bernard Co., J., 422-30 E. 53d St., New York, N. Y.

Boesch Lamp Co., 1135 Mission St., San Francisco, Cal.

Boston Nickel Plating Co., 160 Portland St., Boston, Mass.

Brown Mfg. Co., W. G., Kingston, N. Y.

Cheney & Son, S., Manlius, N. Y.

Creutz Plating Co., Third & Vine Sts., Cincinnati, O.

Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.

Enterprise Brass & Plating Co., Sixth & Baymiller Sts., Cincinnati, O.

Exeter Brass Works, 10 R. R. Ave., Exeter, N. H.

Fitchburg Plating Works, rear 2 Main St., Fitchburg, Mass.

Gartley-Weston Mfg. Co., Real Estate Exchange Bldg., Detroit, Mich.

Harry Bros. Mfg. Co., 1302 E. Woodbridge St., Detroit, Mich.

Iles Mfg. Co., E. W., Shelton, Conn.

Johnson Bronze Co., New Castle, Pa. (See page 181.)

Keuka Industries, Inc., Hammondsport, N. Y.

Keyless Lock Co., Indianapolis, Ind.

Limerick Co., J. Arthur, 960 N. Howard St., Baltimore, Md.

Lionel Corp., 605-21 S. 21st St., Irvington, N. J.

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PLATING, Brass and Nickel (Continued)

Lynam Electrical & Plating Co., Wm., Dakota & Kilmer Sts., Dayton, O.

McKenna Brass & Mfg. Co., First Ave. & Ross St., Pittsburgh, Pa.

Maforco—See Market Forge Co.

Manitowoc Plating Works, 24th & Franklin Sts., Manitowoc, Wis.

Market Forge Co., Garvey St. & Boulevard, Everett, Mass. "Maforco."

Mirrorscope Co., E. 168th St. & Waterloo Rd., Cleveland, O.

Monarch Stamping Co., Chappaqua, N. Y.

National Metalware Co., 95 S. Fifth St., Brooklyn, N. Y.

Nehls Plating Works, Barney, 1462 Brush St., Detroit, Mich.

Paramount Mfg. Co., Westfield, N. J.

Phillips, F. C., Hill St., Stoughton, Mass.

Rockford Metal Specialty Co., 720 S. Main St., Rockford, Ill.

Sani Products Co., 209 W. Randolph St., Chicago, Ill.

Spencer's Sons, I. S., Fair St., Guilford, Conn.

Whitehouse Mfg. Co., 42 Elm St., Newark, N. J. (See page 637.)

PLATING COMPOUNDS—See Compounds, Chemical Plating

PLATING NICKEL—See Plating, Brass

PLATINUM POINTS—See Platinum; also Points, Sparking

PLATINUM RIVETS—See Platinum; also Points, Sparking

PLATINUM SCREWS—See Platinum; also Points, Sparking

PLATINUM, Sheet, Rod and Wire

(For contact screws, rivets and points—See also Points, Sparking. For Platinum substitutes—See Points, Sparking)

American Platinum Works, 225-31 N. J. R. R. Ave., Newark, N. J.

Baker & Co., Newark, N. J. (See page 711.)

Bishop & Co., Platinum Works, J., Malvern, Pa.

Commercial Research Co., Jackson Ave. & Honeywell St., Long Island City, N. Y.

Dee & Co., Thos. J., 5 S. Wabash Ave., Chicago, Ill.

Goldsmith Bros. Smelting & Refining Co., 29 E. Madison St., Chicago, Ill.

National Smelting & Refining Corp., 92 John St., New York, N. Y.

Platt Co., C. S., 29 Gold St., New York, N. Y.

R. & H. Platinum Works, 100 William St., New York, N. Y. (See page 711.)

Wilson Co., H. A., 97 Chestnut St., Newark, N. J.

PLIERS, Combination

Athol Machine Co., Athol, Mass

Barcalo Mfg. Co., Buffalo, N. Y. "Bull Dog."

Bergman Tool Mfg. Co., 1573-75 Niagara St., Buffalo, N. Y.

Bernard—See Scholhorn Co.

Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn. "Hayden."

Bonney Vise & Tool Works, Allentown, Pa. (See page 437.)

Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.

Buffum Tool Co., Louisiana, Mo. (See page 529.)

Bull Dog—See Barcalo Mfg. Co.

Caldwell Tool Mfg. Co., 87 Warren St., New York, N. Y. "Shur-Kut."

Cincinnati Tool Co., Main Ave., Norwood, O. "Hargrave."

Clipper Tool Co., 284 Mills St., Buffalo, N. Y.

Crescent Tool Co., 204 Harrison St., Jamestown, N. Y. "Simplex."

Cronk & Carrier Mfg. Co., Merchants Bank Bldg., Elmira, N. Y.

Cushman Co., Champaign, Ill. (See page 635.)

Diebel, A. J., 976 Woodward Ave., Detroit, Mich. (Michigan, Indiana and Ohio Distributors for Cushman Pliers.) (See page 543.)

Dreadnaught—See Kraeuter & Co.

Eagle—See Mechanical Specialties Co.

Erie Tool Works, 11th & French Sts., Erie, Pa.

Flash Sales Corp., 4809 N. Ashland Ave., Chicago, Ill. "Pliwrench."

Gittatit—See Smith & Co.

Goodell-Pratt Co., Greenfield, Mass.

Graham Roller Bearing Co., Coudersport, Pa. (See page 283.)

Handee—See Racine Handy Mfg. Co.

Hargrave—See Cincinnati Tool Co.

Hayden—See Billings & Spencer Co.

Herbrand Co., 109-25 E. State St., Fremont, O.

Hjorth & Co., Wm., 28 Taylor St., Jamestown, N. Y.

Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributor for "K. I. T.," also "Bull Dog" Pliers.) (See page 1187.)

Kilborn & Bishop Co., Chapel & Lloyd Sts., New Haven, Conn. "Reliance."

K. I. T.—See Graham Roller Bearing Co.

Kraeuter & Co., Newark, N. J. "Dreadnaught," "Victor." (See page 711.)

Lakeside Forge Co., Erie Pa. (See page 1161.)

Larock—See Mechanical Specialties Co.

McKaig Drop Forge Co., 14 Perry St., Buffalo, N. Y.

Mayhew Steel Products, 291 Broadway, New York, N. Y.

Mechanical Specialties Co., 123 S. Michigan Ave., Chicago, Ill. "Eagle," "Larock."

Mossberg Co., Frank, Attleboro, Mass.

National Plier Co., Buffalo, N. Y.

Osborne & Co., C. S., Newark, N. J.

Oswego Tool Co., 119-27 W. First St., Oswego, N. Y.

Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."

Pexto—See Peck, Stow & Wilcox Co.

Pliwrench—See Flash Sales Corp.

Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."

Red Devil—See Smith & Hemenway.

Reed Mfg. Co., W. Eighth St., Erie, Pa.

Reliance—See Kilborn & Bishop Co.

S. & I. Co., 55-57 Governor St., Springfield, Mass.

Scholhorn Co., Wm., Wooster, Wallace & Chapel Sts., New Haven, Conn. "Bernard."

Shark—See Wakefield Mfg. Co.

Shur-Kut—See Caldwell Tool Mfg. Co.

Simplex—See Crescent Tool Co.

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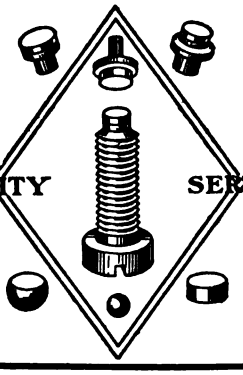

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PLIERS, Combination (Continued)

Smith & Co., H. D., Plantsville, Conn. "Gittatit."

Smith & Hemenway, 130 Cort St., Irvington, N. J. "Red Devil."

Starrett Co., L. S., Athol, Mass.

Syracuse Twist Drill Co., 936 Grape St., Syracuse, N. Y.

V. & B.—See Vaughan & Bushnell Mfg. Co.

Vaughan & Bushnell Mfg. Co., 2114-38 Carroll Ave., Chicago, Ill. "V. & B."

Victor—See Kraeuter & Co.

Vichek Tool Co., Cleveland, O.

West Haven Mfg. Co., 22 Elm St. (West Haven), New Haven, Conn.

Whitaker Mfg. Co., Chicago, Ill. (See page 1177.)

PLIERS, GAS—See Pliers, Combination

PLIERS, TERMINAL—See Tools, Storage Battery Repair

PLUG BRUSHES—See Brushes, Spark Plug

PLUG BUSHINGS—See Bushings, Spark Plug Testing

PLUG CASES—See Cases, Spark Plug

PLUG CLEANERS—See Cleaners, Spark Plug

PLUG HOLDERS FOR FORDS—See Holders, Magneto Plug

PLUG GAGES—See Gages, Plug and Ring

PLUG SWITCHES—See Switches, Spark Plug

PLUG TESTERS—See Testers, Spark Plug

PLUG WRENCHES—See Wrenches, Nut and Bolt

PLUGS, Charging

Anderson Mfg. Co., Albert & J. M., 289 A St., Boston, Mass.

General Electric Co., Schenectady, N. Y. (See page 793.)

Russell & Stoll Co., 48 Cliff St., New York, N. Y.

Universal Electric Stage Lighting Co., 240 W. 50th St., New York, N. Y.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

PLUGS, Core Hole

Hubbard Spring Mfg. Co., Pontiac, Mich. (See page 957.)

PLUGS, Radiator Testing, for Fords

American—See Fairbanks Co.

Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill. "American.") (See pages 137 to 140.)

Service Station Equipment Co.—See Fairbanks Co.

PLUGS, Spark

A-A—See Aircraft & Motor Products Co.

A. C.—See Champion Ignition Co.

Ace—See Comet Mfg. Co.

A. I. M.—See Auburn Ignition Mfg. Co.

Affinity—See Baysdorfer, Otto.

Air-Friction Carburetor Co., First & Madison Sts., Dayton, O.

Aircraft & Motor Products Co., 299 Madison Ave., New York, N. Y. "A-A."

Ajax—See Champion Spark Plug Co.

Akron Spark Plug Co., Second Nat'l Bank Bldg., Akron, O. "Pilot."

Allen Specialty Co., 2721 W. Lake St., Chicago, Ill. "Asko."

American Ace—See Brach Mfg. Co.

American Auto Products Co., 1319 L St., N. W., Washington, D. C. "Federal."

American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "3-A-Co."

American Bosch Magneto Corp. (Brightwood), Springfield, Mass. "Bosch."

American Mfg. Co., 100 Main St., Evansville, Ind. "Red Chief."

Anderson Spark Plug Co., 2700-10 N. Crawford Ave., Chicago, Ill.

Arc-O-Mfg. Co., 2430 S. Michigan Ave., Chicago, Ill.

Arrow—See Reflex Ignition Co.

Asko—See Allen Specialty Co.

Atlas Railway Supply Co., Manhattan Bldg., Chicago, Ill.

Auburn—See New York Mica & Mfg. Co.

Auburn Ignition Mfg. Co., Richmond, Ind. "Blazer." "A. I. M." (See page 715.)

Automat— See Automatic Ignition Co.

Automatic Ignition Co., Foster Bldg., Denver, Colo. "Automat." (See page 1219.)

B. B.—See Brown Bag Filling Machine Co.

B. G.—See Brewster-Goldsmith Corp.

B. A. T. Co., Germantown & Stenton Aves., Philadelphia, Pa. "Panther."

B-Brand—See Buettner Co.

B. G.—See Brewster-Goldsmith Corp.

Baby—See Reflex Ignition Co.

Ball Bearing Spark Plug Co., 614 Harrison Ave., Harrison, N. J.

Bates—See Old Trail Garage.

Baysdorfer, Otto, 210 N. 18th St., Omaha, Neb. "Affinity."

Belvidere Screw & Machine Co., E. Madison St., Belvidere, Ill.

Benford Auto Products, Inc., Mt. Vernon, N. Y. "Monarch," "Golden Giant," "White Cap," "Golden Eagle."

Bengal Mfg. Co., Fourth & Olive Sts., St. Louis, Mo.

Benton Co., L. F., 800 Main St., Vergennes, Vt.

Bethlehem Spark Plug Co., Bethlehem, Pa. (See page 713.)

Biehl, G. M., 204 S. Centre St., Pottsville, Pa.

Big Chief—See Vulcan Spark Plug Co.

Bingham Perfected Spark Plug Co., 324 Mulberry St., Rockford, Ill. (See page 1219.)

Blazer—See Auburn Ignition Mfg. Co.

Blitz—See Randall-Faichney Co.

Blitzen—See Ideal Mfg. Co.

Blu Streak—See Cumming-Forster Corp.

Bosch—See American Bosch Magneto Corp.

Bougie-Mercedes—See Herz.

Brach Mfg. Co., L. S., 127-29 Sussex Ave., Newark, N. J. "American Ace."

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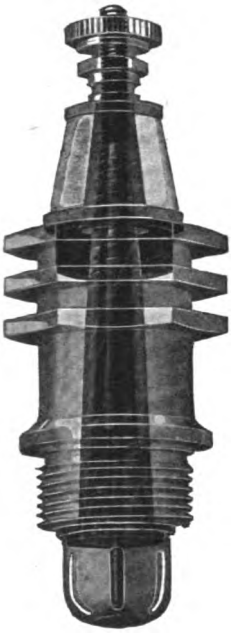

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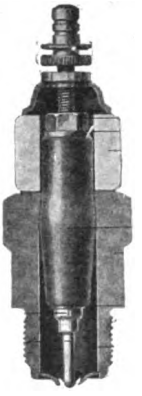

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PLUGS, Spark (Continued)

Brewster-Goldsmith Corp., 33 Gold St., New York, N. Y. "B. G."

Brown Bag Filling Machine Co., 10 Main St., Fitchburg, Mass. "B. B."

Buettner Co., Charles H., Cincinnati, O. "B-Brand."

Burn-Clean—See Comet Tool & Mfg. Co.

Carbo-Gas Co., 205 Huron St., Toledo, O.

Casey-Hudson Co., 341 E. Ohio St., Chicago, Ill. "Liberty," "United."

Chain-O-Spark Co., 1307 Nicollet Ave., Minneapolis, Minn.

Challenge Spark Plug Co., Crowley & Joliet Sts., Joliet, Ill.

Champion Ignition Co., Flint, Mich. "A. C.," "Titian," "Cico." (See page 729.)

Champion Spark Plug Co., 801 Avondale Ave., Toledo, O. "J-D," "Reliance," "Ajax," "Meteor," "Star," "Sta-Rite." (See page 713.)

Cico—See Champion Ignition Co.

Clean-E-Z-Primo—See Premier Electric Co.

Comet Tool & Mfg. Co., 2015 S. Laflin St., Chicago, Ill. "Burn-Clean."

Comet Mfg. Co., 1101 Lindsey Bldg., Dayton, O. "Ace."

Cumming-Forster Corp., 220 S. State St., Chicago, Ill. "Blu Streak."

Dearborn Equipment Co., Kalamazoo, Mich. (See page 403.)

De Luxe—See Lockwood-Ash Motor Co.

Delta Mfg. Co., 9 Delancy St., Newark, N. J.

Derf Mfg. Co., 90 W. Broadway, New York, N. Y. (See page 715.)

Diamond—See Reflex Ignition Co.

Eagle—See Janesville Products Co.

Eclipse Mfg. Co., 424 N. Meridian St., Indianapolis, Ind. "Hercules."

Eklips—See Fulton Co.

Excelsior Leather Washer Mfg. Co., Rockford, Ill. "X. L." (See page 1053.)

Express Spark Plug Co. of America, Westover Bldg., Washington, D. C.

F. M. C.—See Ford Mica Co.

Fan Flame Spark Plug Co., 32 Nepperhan St., Yonkers, N. Y.

Faw, J. H., 27 Warren St., New York, N. Y. "Red Seal." (See page 241.)

Federal—See American Auto Products Co.

Federal Corp., Westfield, Mass. "Liberty," "Jumbo," "Victory."

Fire-Rite Electric Co., 237 Kensington Ave., New Britain, Conn.

F-I-R-O-L Spark Plug Co., 431 S. Dearborn St., Chicago, Ill.

Flash—See Long Bros.

Ford Mica Co., 14 Christopher St., New York, N. Y. "F. M. C."

Foul-Less Spark Plug Co., 220 E. Third St., Davenport, Ia.

Francs Mfg. Co., 845 Wealthy St., S. E., Grand Rapids, Mich.

Fulton Co., 75th & National Aves., Milwaukee, Wis. "Eklips." (See pages 1031 to 1036.)

Fyrac Mfg. Co., 214 E. State St., Rockford, Ill.

Fyresm—See Wellman-Muter Corp.

Giant—See Reflex Ignition Co.

Globe—See Kahn Mfg. Co.

Go Far—See Multiple Spark Plug Mfg. Co.

Golden Eagle—See Benford Auto Products.

Golden Giant—See Benford Auto Products.

Goliath—See Sharp Spark Plug Co.

Green Dragon Co., 54 W. Randolph St., Chicago, Ill.

Green Jacket—See Splitdorf Electrical Co.

Griffin Mfg. Co., 113 State St., Boston, Mass.

H. M. S. Bull Dog—See Hartford Machine Screw Co.

Hall Ignition Mfg. Co., Willimantic, Conn.

Hampshire Mfg. Co., Hatfield, Mass. "Wizard."

Hartford Machine Screw Co., Hartford, Conn. "Master," "H. M. S. Bull Dog." (See page 839.)

Helfi Co., Belvidere, Ill.

Hercules—See Eclipse Mfg. Co.

Herz, 182 Locust Ave., New York, N. Y. "Bougie Mercedes." (See page 713.)

Hi-Test Products Co., 669 W. Ohio St., Chicago, Ill.

Hill Insulating & Mfg. Corp., 500 W. 42d St., New York, N. Y. "3 A." (See page 713.)

Hundred Per Cent Mfg. Co., 614 Washington St., Lynn, Mass.

Hyatt Ignition Co., 600 N. High St., Columbus, O.

Ideal Mfg. Co., 14th & Harrison Sts., (North Kansas City) Kansas City, Mo. "Blitzen."

Ignition Co. of America, Port Jervis, N. Y. (See page 719.)

Imp—See Improved Motor Accessories Co.

Improved Motor Accessories Co., 3405 Perkins Ave., Cleveland, O.

J-D—See Champion Spark Plug Co.

J. E. F. Spark Plug Co., 339-91 Fifth St., Milwaukee, Wis.

Janesville Products Co., 600 W. Milwaukee St., Janesville, Wis. "Eagle," "X. L."

Johnson Spark Plug Co., 611 Pierce St., Sioux City, Ia. "M. C. D."

Joly—See Lyons Ignition Co.

Jubilee Mfg. Co., 1929 S. 20th St., Omaha, Neb.

Jumbo—See Federal Corp.

K. L. G.—See Smith & Sons.

Kahn Mfg. Co., Milwaukee, Wis. "Globe." (See page 717.)

Kant-Break Spark Plug Co.—See Socket Co.

Kant-Mis Spark Plug Co., Green Bay, Wis. (See page 727.)

Keeps Klean—See Porter Co.

Kid—See Reflex Ignition Co.

Kingston—See Kokomo Electric Co.

Kokomo Electric Co., 1450 N. Webster St., Kokomo, Ind. "Kingston."

Kopper King—See Sharp Spark Plug Co.

Kopper King, Jr.—See Sharp Spark Plug Co.

L-A—See Lockwood-Ash Motor Co.

L. K. Auto Ignition Co., 1777 Broadway, New York, N. Y. "Prime-Or-Klean."

Lauraine Magneto Co., Long Island City, N. Y.

Leader—See Vital Mfg. Co.

Leich Electric Co., Genoa, Ill. "Radd."

Liberty—See Casey-Hudson Co.

Liberty—See Federal Corp.

Liberty Ignition Co., Westfield, Mass.

Liberty Spark Plug Co., 91 Lafayette St., Newark, N. J.

Lightning—See Reflex Ignition Co

Lightning Spark Plug Co., 940-42 S. Los Angeles St., Los Angeles, Cal.

Lincoln—See Standish Mfg. Co.

Lion—See Rex Ignition Mfg. Co.

Lockwood-Ash Motor Co., 2052 Douglas St., Jackson, Mich. "L-A," "Sterling."

Longaker Co., V. A., 448-50 N. Capitol Ave., Indianapolis, Ind. "Balco."

Long Bros., Broadway & Buckeye St., Kokomo, Ind. "Royal," "Service," "Flash."

Long Distance Spark Plug Co., 2616 Second Ave. N., Birmingham, Ala.

Lydon Mfg. Co., 108 N. Wabash Ave., Chicago, Ill. "Lynamite."

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This test makes 27¢ gasoline cost 18¢ per gallon.

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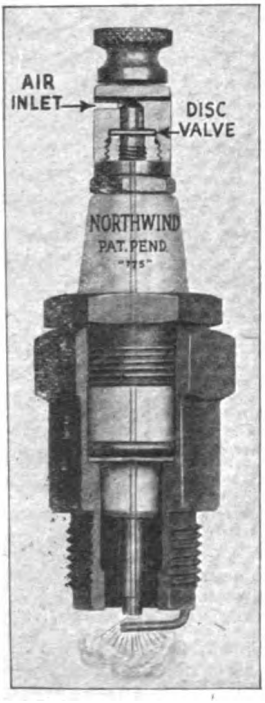

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At the Brooklyn Polytechnic Institute they tried deliberately to make a Northwind foul by heavily coating the gap with lubricating oil and lamp black.

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The center electrode is hollow. On every suction stroke, a little air is taken in through a tiny hole at the top, passes through the center electrode and is blown out in a powerful jet at the bottom, right over the sparking points.

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PLUGS, Spark (Continued)

Lynamite—See Lydon Mfg. Co.

Lyons Ignition Co., 215-19 Fourth Ave., New York, N. Y. "Joly." (See page 717.)

M. C. D.—See Johnson Spark Plug Co.

Marvel Mfg. Co., 901 Madison Ave., Bridgeport, Conn. "New-Departure."

Master—See Hartford Machine Screw Co.

Meteor—See Champion Spark Plug Co.

Michigan Spark Plug Co., 148 E. Larned St., Detroit, Mich. "Sure-Spark."

Milwaukee Auto Specialty Mfg. Co., 705-15 Chestnut St., Milwaukee, Wis.

Modco—See Modern Comb & Device Co.

Modern Comb & Device Co., Reibold Bldg., Dayton, O. "Modco."

Mogul—See Gas Motor Efficiency Co.

Monarch—See Benford Auto Products.

Morgan Mfg. Co., Court St., Keene, N. H. (See page 751.)

Mosler & Co., A. R., Mt. Vernon, N. Y. "Spit Fire," "Triumph," "Vesuvius," "Superior."

Multiple Spark Plug Mfg. Co., 138 Holden St., Minneapolis, Minn. "Go Far."

Myers Spark Plug Co., Myers Bldg., Toledo, O.

New-Departure—See Marvel Mfg. Co.

New York Mica & Mfg. Co., 27 Clark St., Auburn, N. Y. "Auburn," "Wright."

Niles Mfg. Co., Niles, Mich. "Unique." (See page 877.)

Northwind Spark Plug Corp., 42 W. 39th St., New York, N. Y. (See page 715.)

Norwalk Ignition Co., Norwalk, Conn.

N. Y. & Brooklyn Auto Supply Co., 1717 Broadway, New York, N. Y. "Quality."

Oakes & Dow Co., 311 Atlantic Ave., Boston, Mass. "Sootless."

Ojus Spark Plug Works, 16 S. Congress Ave., Atlantic City, N. J.

Olson Co., Wm. O., 431 S. Dearborn St., Chicago, Ill.

Only Spark Plug Mfg. Co., Fifth & Long Sts., Columbus, O.

P & P—See Page & Pohle.

Page & Pohle, 12 Maple St., Lynn, Mass. "P & P."

Panther—See B. A. T. Co.

Penn Mfg. Co., 319 W. Ninth St., Kansas City, Mo.

Pennsylvania Rubber & Supply Co., 2819 Prospect St., Cleveland, O. "Prsco."

Pep Spark Plug Co., 223½ S. Sixth St., Minneapolis, Minn.

Perron Co., Sparta, Wis.

Pilot—See Akron Spark Plug Co.

Pittsburgh Visible Spark Plug & Mfg. Co., 460-68 Melwood Ave., Pittsburgh, Pa.

Porter Co., 20 W. Jackson Blvd., Chicago, Ill. "Keeps Klean."

Premier Electric Co., 3800-10 Ravenswood Ave., Chicago, Ill. "Clean-E-Z-Prime."

Prime-Or-Klean—See L. K. Auto Ignition Co.

Pronto Mfg. & Sales Co., 706 S. 24th St., Omaha, Neb.

Protecto—See Vital Mfg. Co.

Prsco—See Pennsylvania Rubber & Supply Co.

Puritan—See Symonds Co.

Quality—See N. Y. & Brooklyn Auto Supply Co.

Quick Action Ignition Co., South Bend, Ind.

Radd—See Leich Electric Co.

Rajah Auto Supply Co., Locust Ave. & Nelson St., Bloomfield, N. J.

Randall-Faichney Co., 76 Atherton St. (Jamaica Plain), Boston, Mass. "Blitz."

Ray-O Mfg. Co., 246-53 Fulton St., Brooklyn, N. Y. (See page 717.)

Red Chief—See American Mfg. Co.

Red Head Spark Plug Corp., 88 Reade St., New York, N. Y.

Red Line, Inc., Grand Rapids, Mich. (See page 1047.)

Red Seal—See Faw, J. H.

Reflex Ignition Co., 3056 W. 106th St., Cleveland, O. "Arrow," "Lightning," "Giant," "Baby," "Kid," "Diamond." (See page 717.)

Reliance—See Champion Spark Plug Co.

Renu Corp., 273 State St., New Haven, Conn.

Rex Ignition Mfg. Co., 250 W. 54th St., New York, N. Y.

Richey Spark Plug Co., 20 Broad St., New York, N. Y.

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco."

Royal—See Long Bros.

Rummell Mfg. Co., 117 E. Sandusky St., Findlay, O.

Rusco Internal Spark Plug & Accessory Co., 3101 S. State St., Chicago, Ill.

S. & M. Mfg. Co., Vandergrift Bldg., Pittsburgh, Pa.

Service—See Long Bros.

Sharp Spark Plug Co., C. A. C. Bldg., Cleveland, O. "Goliath," "Kopper King," "Kopper King, Jr."

Shaw Mfg. Co., Oak Park, Ill. "Triumph."

Shurnuff Mfg. Co., 3126 Locust St., St. Louis, Mo.

Smith & Sons, S., 154 Nassau St., New York, N. Y. "K. L. G." (Importers.) (See page 301.)

Socket Co., C. W., Free Press Bldg., Detroit, Mich. (Sole Distributors for Kant-Break Spark Plug Co., St. Louis, Mo.)

Sootless—See Oakes & Dow Co.

Spit Fire—See Mosler & Co.

Splitdorf Electrical Co., 98 Warren St., Newark, N. J. "Green Jacket."

Sta-Rite—See Champion Spark Plug Co.

Standish Mfg. Co., Myles, 419 S. 12th St., Omaha, Neb. "Lincoln."

Star—See Champion Spark Plug Co.

Sterling—See Lockwood-Ash Motor Co.

Stewart-Warner Speedometer Corp., Chicago, Ill. "V-Ray." (See page 177.)

Stitt Ignition Co., 16 E. First Ave., Columbus, O.

Su-Dig—See Superior Motor Power Co.

Superior—See Mosler & Co.

Superior Motor Power Co., 30 Irving Pl., New York, N. Y. "Su-Dig."

Sure-Spark—See Michigan Spark Plug Co.

Symms-Brownell Mfg. Co., Sioux Falls, S. Dak. "Wes-Plug."

Symonds Co., Joseph H., Westfield, Mass. "Puritan."

T-N-T Spark Plug Co., 2108 Superior Ave., W., Cleveland, O.

Thomas Spark Plug Co., Roselle Park, N. J. (See page 719.)

3A—See Hill Insulating & Mfg. Co.

3-A-Co.—See American Automobile Accessories Co.

Titan—See Champion Ignition Co.

Triumph—See Mosler & Co.

Triumph—See Shaw Mfg. Co.

Tungsten Mfg. Co., Marshalltown, Ia. (See page 1111.)

Twin Fire Spark Plug Co., 3964 W. Grand River Ave., Detroit, Mich.

Uko—See Utility Co.

United—See Casey-Hudson Co.

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FORD Reflex, special type.
ARROW Reflex, regular extension, and Buick.
KID and BABY Reflex, for motorcycles
LIGHTNING Reflex, for general use.
PRIMER Reflex, the real priming plug.
NUMBER 1 Reflex, for general purposes.
NUMBER 2 Reflex, made in millimeter sizes.
CONICAL Reflex, for hot running engines.

Engineers, Manufacturers, Jobbers, Dealers—an inquiry will receive prompt attention.

The Reflex Ignition Company
3056 West 106th St., Cleveland, U. S. A.

REFLEX SPARK PLUGS
KEEP THE CAR ON THE GO!

THE RAY-O MFG. CO.

Makers of Complete

SPARK PLUGS

Mica Cores
Tubes and
Other "Specialties"

246-252 Fulton Street
BROOKLYN, N. Y.

KAHN GLOBE

A SPARK PLUG THAT IS DIFFERENT

The Kahn Globe Spark Plug is backed by more than implied promises or stories of what it will do. No plug has ever been subjected to the severe tests that this plug had to meet before it was placed on the market. On land, sea, and in the air, from single cylinder half horse stationary engines up to the gruelling tests of airplane service, this plug was tried and proven better.

This Plug Sells Itself

It's the only plug on the market that has directions for installing. Those directions sell the plug, for there must be a saving in gas and a more smoothly running engine before the plugs will work right.

Jobbers—Dealers—Get our proposition. It puts Spark Plug selling on a different basis.

KAHN MFG. CO.
MILWAUKEE WISCONSIN

FIVE MILLION JOLY SPARK PLUGS USED IN THE GREAT WAR

80% of airplane plugs used by England, France, Italy and Russia, were JOLY SPARK PLUGS.

The Joly Spark Plug cannot develop carbon, leak compression, short circuit, cause pre-ignition or fail to synchronize between explosions.

The insulation on Joly Spark Plugs prohibits short circuit. Breakage is impossible.

Automobile type retails at $1.50.

Write us today for agency franchise.

LYONS IGNITION CO.
215-219 Fourth Avenue
New York

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PLUGS, Spark (Continued)

Unique—See Niles Mfg. Co.

Utility Co., 636 W. 44th St., New York, N. Y. "Uko."

V-D—See Viktry Mfg. Co.

V-Ray—See Stewart-Warner Speedometer Corp.

V. & B. 99—See Vaughan & Bushnell Mfg. Co.

Valco—See Longaker Co.

Vaughan & Bushnell Mfg. Co., 2114-38 Carroll Ave., Chicago, Ill. "V. & B. 99."

Vesuvius—See Mosler & Co.

Victor Spark Plug Co., 250 Devonshire St., Boston, Mass.

Victory—See Federal Corp.

Visible Spark Plug Co., Bowman Bldg., Pittsburgh, Pa. "Viz."

Viktry Sales Co., 389 Fifth St., Milwaukee, Wis. "V-D." (See page 770.)

Vital Mfg. Co., 7507 Quincy St., Cleveland, O. "Protecto," "Leader."

Viz—See Visible Spark Plug Co.

Vulcan Ignition Co., 25 Church St., New York, N. Y.

Wade Mfg. Co., 415 N. Fourth St., Camden, N. J.

Washington Automobile Supply Co., Washington, Ill.

Wellman-Muter Corp., 21 E. Van Buren St., Chicago, Ill. "Fyresm." (See page 599.)

Wes-Plug—See Symms-Brownell Mfg. Co.

Wesplug—See Western Spark Plug Co.

Western Spark Plug Co., 14th & Harrison Sts., North Kansas City, Mo. "Wesplug."

White Cap—See Benford Auto Products.

Wichita Zig Zag Spark Plug Co., Wichita, Kans. "Zig Zag."

Wizard—See Hampshire Mfg. Co.

Wright—See New York Mica & Mfg. Co.

X L—See Excelsior Leather Washer Mfg. Co.

X L—See Janesville Products Co.

Zig Zag—See Wichita Zig Zag Spark Plug Co.

PLUGS, Special and Priming Spark, for Fords

Ac—See Champion Ignition Co.

Air-Friction Carburetor Co., First & Madison Sts., Dayton, O.

Arrow—See Reflex Ignition Co.

Auburn Ignition Mfg. Co., Richmond, Ind. "Long Henry."

B. A. T. Co., Germantown & Stenton Aves., Philadelphia, Pa. "Panther."

Benford Auto Products, Mt. Vernon, N. Y. "Reliable Monarch."

Benton Co., L. F., 300 Main St., Vergennes, Vt.

Bethlehem Spark Plug Co., Bethlehem, Pa. (See page 713.)

Champion Ignition Co., Flint, Mich. "Ac," "Cico." (See page 729.)

Champion Spark Plug Co., 801 Avondale Ave., Toledo, O. (See page 713.)

Cico—See Champion Ignition Co.

Clean-E-Z-Prime—See Premier Electric Co.

Delta Mfg. Co., 9 Delancey St., Newark, N. J.

Derf Mfg. Co., 90 W. Broadway, New York, N. Y. (See page 715.)

Diamond Z—See Hampshire Mfg. Co.

Flash—See Long Bros.

Gardner Auto Products Co., Detroit, Mich. (Sole Distributors for Gardner Carburetor & Brass Works, Detroit, Mich.) (See page 239.)

Gardner Carburetor & Brass Works—See Gardner Auto Products Co.

Globe—See Kahn Mfg. Co.

Go Far—See Multiple Spark Plug Mfg. Co.

Goliath—See Sharp Spark Plug Co.

Fyrac Mfg. Co., 214 E. State St., Rockford, Ill.

Hampshire Mfg. Co., Hatfield, Mass. "Diamond Z." "Wizard."

Hartford Machine Screw Co., Hartford, Conn. "Master." (See page 839.)

Hers, 182 Locust Ave., New York, N. Y. (See page 713.)

Hill Insulating & Mfg. Corp., 509 W. 42d St., New York, N. Y. "3 A." (See page 713.)

Hundred Per Cent Mfg. Co., 614 Washington St., Lynn, Mass.

Janesville Products Co., 600 W. Milwaukee St., Janesville, Wis. "X L."

Kahn Mfg. Co., Milwaukee, Wis. "Globe." (See page 717.)

Kopper King—See Sharp Spark Plug Co.

Kopper King, Jr.—See Sharp Spark Plug Co.

Leader—See Vital Mfg. Co.

Lockwood-Ash Motor Co., 2052 Douglas St., Jackson, Mich.

Long Bros., Broadway & Buckeye St., Kokomo, Ind. "Flash." "Royal."

Long Henry—See Auburn Ignition Mfg. Co.

M. M. & E. Sales Co., Lenawee Co. Bank Bldg., Adrian, Mich.

Master—See Hartford Machine Screw Co.

Mosler & Co., A. R., Mt. Vernon, N. Y. "Ram Rod."

Multiple Spark Plug Mfg. Co., 138 Holden St., Minneapolis, Minn. "Go Far."

Oakes & Dow Co., 311 Atlantic Ave., Boston, Mass. "Sootless."

Ojus Spark Plug Works, 16 Congress Ave., Atlantic City, N. J.

Panther—See B. A. T. Co.

Premier Electric Co., 3800-10 Ravenswood Ave., Chicago, Ill. "Clean-E-Z-Prime."

Rajah Auto Supply Co., Locust Ave. & Nelson St., Bloomfield, N. J.

Ram Rod—See Mosler & Co.

Red Head Spark Plug Corp., 88 Reade St., New York, N. Y.

Reflex Ignition Co., 3056 W. 106th St., Cleveland, O. "Arrow." (See page 717.)

Reliable Monarch—See Benford Auto Products.

Rex Ignition Mfg. Co., 250 W. 54th St., New York, N. Y.

Royal—See Long Bros.

Rummell Mfg. Co., 177 E. Sandusky St. Findlay, O.

Sharp Spark Plug Co., C. A. C. Bldg., Cleveland, O. "Goliath," "Kopper King," "Kopper King, Jr."

Sootless—See Oakes & Dow Co.

Standish Mfg. Co., Myles, 419 S. 12th St., Omaha, Neb.

Stewart-Warner Speedometer Corp., Chicago, Ill. "V-Ray." (See page 177.)

Stitt Ignition Co., 16 E. First Ave., Columbus, O.

Superior Motor Power Co., 30 Irving Pl., New York, N. Y. "Twin-Tact."

3A—See Hill Insulating & Mfg. Co.

Twin-Tact—See Superior Motor Power Co.

V-Ray — See Stewart-Warner Speedometer Corp.

Vital Mfg. Co., 7507 Quincy St., Cleveland, O. "Leader."

Wade Mfg. Co., 415 N. Fourth St., Camden, N. J.

Wizard—See Hampshire Mfg. Co.

XL—See Janesville Products Co., 600 W. Milwaukee St., Janesville, Wis.

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A SUITABLE GRADE FOR EVERY PURPOSE

MOTORFLAKE

A selected grade of Superflake Graphite especially prepared and ground to an impalpable fineness, used on Automobiles, Motor Boats, Motor Cycles and all automotive equipment. Packed in cans, drums and barrels.

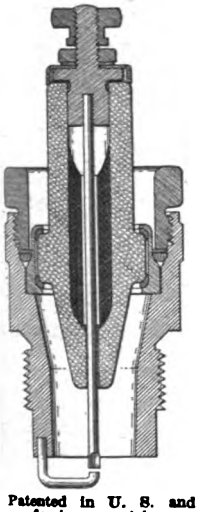
SUPERFLAKE GRAPHITE

SUPERIOR FLAKE GRAPHITE CO.

Mines: ASHLAND, ALA. Offices & Warehouse: 76 W. Monroe St. CHICAGO, ILL.

PACKED
½, 1, 5 and 10 Pound Cans
25, 50, 100 Pound Kegs
Barrels or Sacks

Why The Thomas "Twin Seat" Spark Plug is Best



Patented in U. S. and foreign countries.

Its "Twin Seat" construction provides for easy cleaning without removing Shell Body from motor. The firing points are self-adjusting after cleaning.

All pressure is relieved from binding nut thus preventing insulator breakage, but if insulator should be broken through carelessness or accident it can be easily replaced thereby saving cost of new plug.

Pre-ignition from overheated electrode is prevented and efficiency of combustion increased thereby reducing carbon deposits.

Eliminates gas, compression and electrical leakage.

Makes priming cocks unnecessary. To prime slightly loosen binding nut, prime and tighten.

These are a few of the reasons why Thomas "Twin Seat" Spark Plugs are BEST for both motorist and Dealer. Write us today for further information and our trade proposition.

Manufactured by

THOMAS SPARK PLUG CO., Inc.
Roselle Park, New Jersey

A Spark Plug That Sparks

under the meanest conditions to which a Plug can be subjected.

For more than a year this Plug has given perfect satisfaction in motors where ordinary Plugs failed.

It is so designed that it stays clean under the most adverse conditions of oil and carbon.

No porcelain to crack, chip or break. Best grade mica used for insulation, producing a trouble-free, indestructible Plug.

The Dealer whose first consideration is to handle a quality product will find that this plug exceeds his most sanguine expectations.

Attractive discounts to the trade.

IGNITION CO. OF AMERICA
Port Jervis, New York

Standard and Special Screw Products

NUTS

PLAIN AND CASTELLATED

THE SHERMAN-KLOVE COMPANY

4519–4523 West Harrison Street
CHICAGO - - - - ILLINOIS

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PLUGS, Tire Repair

Continental Rubber Works, 1902 Liberty St., Erie, Pa. "Vitalic."
G. A. C.—See General Appliance Co.
General Appliance Co., 100 Boylston St., Boston, Mass. "G. A. C."
Goodrich Co., B. F., S. Main St., Akron, O.
H & K Accessory Co., 4005 W. North Ave., Chicago, Ill. "No-C-Ment."
No-C-Ment—See H & K Accessory Co.
Sampson—See Stevens & Co.
Stevens & Co., 375 Broadway, New York, N. Y. "Sampson." (See page 1147.)
Vitalic—See Continental Rubber Works.

PNEUMATIC BARREL PUMPS — See Pumps, Barrel Emptying

PNEUMATIC BRAKES—See Brakes, Air

PNEUMATIC CHUCKS — See Chucks, Pneumatic

PNEUMATIC DRILLS—See Tools, Pneumatic

PNEUMATIC GARAGE DOOR OPENERS —See Openers, Electric and Pneumatic Garage Door

PNEUMATIC TIRES—See Tires

PNEUMATIC TOOLS—See Tools, Pneumatic

PNEUMATIC WHEELS—See Wheels, Special

POCKET COMPASSES—See Compasses, Motorists' Pocket

POCKET LIGHTS—See Lights, Electric Flash

POCKET METERS—See Gages, Battery

POCKETS, CURTAIN, FOR FORDS—See Pockets, Top Curtain

POCKETS, Door, for Fords

(See also Covers, Slip; also Tops, Special)

A. & E. Auto Top Co., 33-35 E. Cross St., Ypsilanti, Mich. (See page 325.)
Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 321.)
Carroll Mfg. Co., 683 Mass. Ave., Arlington, Mass
Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.
Economy Seat Co., 3132-36 S. Canal St., Chicago, Ill. "Esco."
Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 545.)
Esco—See Economy Seat Co.
Fitzwell—See Niagara Fabric Mfg. Co.
Hodes-Zink Mfg. Co., 312 W. State St., Fremont, O. "Sure-Fit."
Hopewell Bros., Watertown, Mass. (See page 629.)
Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.
Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 321.)
Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."
Prince Mfg. Co., 6 Liberty Ct., Sumter, S. C. "Princeford."
Princeford—See Prince Mfg. Co.
Simon & Co., S. C., 325 N. Second St., Philadelphia, Pa.
Sure-Fit—See Hodes-Zink Mfg. Co.

POCKETS, STAKE—See Pockets, Truck Stake

POCKETS, Top Curtain for Fords

Nofalt Motor Products Co., People's Gas Bldg., Holyoke, Mass.

POCKETS, Truck Stake

Eberhard Mfg. Co., 2734 Tennyson Ave., Cleveland, O.

POINTS, PLATINUM—See Platinum; also Points, Sparking

POINTS, Sparking

(Rivets, Contact Points and Screws of Platinum or Platinum Substitute; for Platinum in sheets, rods or wire—See Platinum, Sheet)

American Platinum Works, 225-31 N. J. R. R. Ave., Newark, N. J.
American Smelting & Refining Co., 92 John St., New York, N. Y.
Baker & Co., Newark, N. J. (See page 711.)
Bishop & Co., Platinum Works, J., Malvern, Pa.
Commercial Research Co., Jackson Ave. & Honeywell St., Long Island City, N. Y. "Comreco."
Driver-Harris Co., Harrison, N. J.
Electrical Alloy Co., Morristown, N. J.
Gilfillian Bros. Smelting & Refining Co., 217 W. Sixth St., Los Angeles, Cal.
Goldsmith Bros. Smelting & Refining Co., 29 E. Madison St., Chicago, Ill.
H. & L. Ignition Parts Mfg. Co., 300 W. Broadway, New York, N. Y.
K-W Ignition Co., 2900 Chester Ave., Cleveland, O. "Sparkite." (See page 621.)
Lance Mfg. Co., Center St., New York, N. Y.
Millwood-Brackett Co., 1601 Locust St., Des Moines, Ia. (See page 1151.)
Multipole Point Spark Plug Co., 8 Carroll St., Brooklyn, N. Y.
Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)
New Era Spring & Specialty Co., 51-55 Cottage Grove St., S. W., Grand Rapids, Mich.
R. & H. Platinum Works, 100 William St., New York, N. Y. (See page 711.)
Schwartz, Daniel S., Bible House, New York, N. Y.
Sparkite—See K-W Ignition Co.
Tungsten Products Co., Erie Bldg., Cleveland, O.
Weidenhoff, Joseph, 4352 W. Roosevelt Rd., Chicago, Ill.
Wilson Co., H. A., 97 Chestnut St., Newark, N. J.

POCKETS, STAKE—See Pockets, Truck Stake

POLISHERS, ELECTRIC PORTABLE—See Drills, Electric Portable

POLISHES, Automobile Body

(See also Soaps, Automobile)

A-No-One Polish Co., 363 Jefferson Ave., Rochester, N. Y.
A-S-K—See Dayton Polish Co.

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MP Cables for Starting, Lighting and Ignition

PLAIN RUBBER CABLE

No.	Descrip.	Gauge	App. Dia.	Use	App. Weight Per 1000 Ft.	Stranding
MPS-23P	S	14	5mm.	Primary	26½ lbs.	12/26
MPS-25P	"	14	7mm.	Secondary	50 "	12/26
MPS-29P	"	14	9mm.	"	71 "	12/26
MP-16	R	14	7.2mm.	Magneto	51 "	12/26

ARMORED CABLE
(Copper Clad)

MP-258	BBA	14	5/32"	Lighting	32 lbs.	37/30
MP-260	"	12	11/64"	"	43 "	65/30
MP-262	"	10	13/64"	"	59 "	104/30
MP-266	2BBA	14	9/32"	Twin Lighting	73½ "	37/30
MP-272	"	12	5/16"	" "	105 "	65/30

BRAIDED CABLE

MPS-23-2B	SBB	14	7/32"	Primary & Lighting	22½ lbs.	12/26
MPS-71	SB	16	11/64"	" " "	18¼ "	19/29
MPS-73	"	14	13/64"	" " "	19½ "	19/27
MP-10	RBB	14	5.3mm.	Magneto Primary	28 "	37/10
MP-12	RB	14	7.2mm.	" Secondary	47 "	12/26
MP-12A	"	14	9.1mm.	" "	76 "	12/26
MPS-25B	SB	14	7mm.	Secondary	47 "	12/26
MPS-29B	"	14	9mm.	"	74 "	12/26
MPS-75	"	12	7/32"	Lighting	34 "	19/25
MPS-77	"	10	17/64"	"	46 "	40/26
MPS-79	"	8	19/64"	"	----	64/20
MPS-83	2SB	16	23/64"	Twin Lighting	42 "	19/29
MPS-85	"	14	25/64"	" "	43 "	19/27

STAGE CABLE

MP-18	2RBB	18	....	Drop Light	----	----

BRAID AND CAMBRIC CABLE

MP-74	RVB	14	13/64"	Primary & Lighting	24½ lbs.	37/30
MP-76	"	12	7/32"	Lighting	37 "	65/30
MP-78	"	10	17/64"	"	53 "	104/30
MP-86	2RVB	14	25/64"	Twin Lighting	50 "	37/30
MP-88	"	12	27/64"	" "	74 "	65/30

STARTING CABLE

MP-50	VVB	00	45/64"	Starting	489 lbs.	334/24
MP-52	"	0	43/64"	"	386 "	259/24
MP-54	"	1	41/64"	"	317 "	209/24
MP-56	"	2	36/64"	"	239 "	164/24
MP-58	"	3	32/64"	"	199 "	133/24
MP-60	"	4	29/64"	"	160 "	108/24
MP-62	"	6	25/64"	"	105 "	168/28

Order by Number

Key—(R) Rubber, (S) Special Rubber Composition, (A) Armored, (V) Varnished Cambric Tape, (B) Braid Coverings, (BB) Double Braid

MP Cable is made of the best material obtainable and is fully guaranteed against defect. Formerly manufactured by Motor Parts Co., of Philadelphia.

Comes in 100 feet coils packed in dust proof package, properly marked. Estimates given for complete car wiring assemblies.

GOODRICH-LENHART MANUFACTURING CO.

HAMBURG, PA.

Also Manufacturers of

Ford Coil Locks
Motor Testing Valves (Cut-outs)
Ford Brake Shoes
Ford Reinforcing Arm
Ford Gas Tank Covers
Ford Timer
Ford Wiring Assemblies
Ford, Chevrolet 490, and Oakland Ball Bearings
Ford Radiator Caps
Ford Truss Rods

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POLISHES, Automobile Body (Continued)

Acme Polish Co., 7227 Mt. Vernon St., Pittsburgh, Pa.

Acme White Lead & Color Works, 8250 St. Aubin Ave., Detroit, Mich.

Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Hy-Pol." (See page 267.)

Ajaco—See Alsdorf Corp.

Alder Chemical Co., 135 Washington St., Mt. Vernon, N. Y. "Star Clean."

Alexander Mfg. Co., J., 1991 Broadway, New York, N. Y. "Holbrook."

All-in-One—See Scientific Mfg. Co.

Alsdorf Corp., A. J., 404 S. Wells St., Chicago, Ill. "Ajaco."

American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "Dri-Klean-It."

American Paint Products Co., 736 S. Wabash Ave., Chicago, Ill.

American Povar Corp., 536 W. 58th St., New York, N. Y. "Povar."

American Textile Mfg. Co., Cleveland, O. "Golden Rod," "Pyn-Ol."

Americus Products Mfg. Co., 627 W. Canfield Ave., Detroit, Mich.

Armiger Chemical Co., 2155 W. Austin Ave., Chicago, Ill. "Rex."

Arnold, N. B., 1 Sigourney St., Brooklyn, N. Y. "Slikup."

Arnstein, Eugene, 45 W. 26th St., Chicago, Ill. "Century."

Autoglo—See Hill-Smith Metal Goods Co.

Autoglos Co., 238-42 W. Jefferson Ave., Detroit, Mich.

Auto-Gloss—See Indianapolis Paint & Color Co.

Auto-Klean—See Lucas & Co.

Auto-Lak—See Johnson & Son.

Auto-Lustre—Farley & MacNeill.

Autoclean—See Bridgeport Wood Finishing Co.

Auto-Newer—See Pimbley Paint & Glass Co.

Autolustre—See Moore & Co.

Automotive Mfg. Co., Washington, D. C.

Auto Products Mfg. Co., Buffalo, N. Y. "Rub-on." (See page 225.)

B. P. S.—See Patterson-Sargent Co.

Baum's Castorine Co., 104 N. George St., Rome, N. Y.

Be-Be-Co—See Boston Blacking Co.

Bear Cat Products Co., Capitol Hill Sta., Oklahoma City, Okla.

Billings-Chapin Co., 1163 E. 40th St., Cleveland, O. "Reflectal."

Blood & Co., T. L., 413 Wacouta st., St. Paul, Minn.

Blue Ribbon—See International Metal Polish Co.

Blue Ribbon—See Sawyer Oil Co.

Blue Stripe—See Whitman, Bayard J.

Body-Nu—See Nu Back Mfg. Co.

Boston Blacking Co., Third & Potter Sts., Cambridge, Mass. "Be-Be-Co."

Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.

Boyle Co., A. S., 1934-40 Dana Ave., Cincinnati, O. "Old English."

Bradley & Vrooman Co., 2629 Dearborn St., Chicago, Ill. "Perma-Lac."

Brett Dimmer Co., A. H., Mason City, Ia. "C. C."

Bridgeport Wood Finishing Co., New Milford, Conn. "Autoclean."

Brilliant Lustre—See Hall-Thompson Co.

Brooks-Ostruk Co., 225 W. 66th St., New York, N. Y.

Brooks & Co., Clarence, 249-77 Chestnut St., Newark, N. J.

Buffalo Specialty Co., Buffalo, N. Y. "Liquid Veneer." (See page 225.)

Bulls-Eye—See Zinsser & Co.

Burnishine—See Paul & Co.

Byron Motor Co., 90 Locust Ave. (Lake View), Worcester, Mass.

C. C.—See Brett Dimmer Co.

Callery & Co., W. W., 188 36th St., Pittsburgh, Pa.

Camden Chemical Mfg. Co., 18th & Mickle Sts., Camden, N. J. "Greyhound."

Campbell Glass & Paint Co., Main & Gratiot Sts., St. Louis, Mo.

Cassene Mfg. Co., 3671 Rutger St., St. Louis, Mo.

Century—See Arnstein, Eugene.

Channell Chemical Co., 58 E. Washington St., Chicago, Ill. "O-Cedar."

Chemical Specialties Co., 327 South West Blvd., Kansas City, Mo.

Cincinnati Oil Works Co., 525 Eggleston Ave., Cincinnati, O. "Re-Nu."

Cleanit—See Perkins-Campbell Co.

Cleanola Co., Fulton Bldg., Pittsburgh, Pa.

Clean-O-Shine—See Pratt Mfg. Co.

Cleen Shyne—See Sole Mfg. Co.

Colgan Mfg. & Supply Co., 118 Maiden Lane, New York, N. Y. "Gem."

Columbus Varnish Co., Columbus, O. "Peerless." (See page 365.)

Common-Sense Mfg. Co., 506 N. Whittier St., St. Louis, Mo.

Cook, Geo. E., 2322 Broadway, New York, N. Y.

Crum Mfg. Co., 120 N. Main St., Ottawa, Kans. "New-Lustre."

Crystal—See Kellerman, I.

Cunningham & Berrien, 25 W. 42nd St., New York, N. Y. (Sole Distributers for Wonder-Mist Co., Boston, Mass.) (See page 419.)

Damon Mfg. Co., 901 Rush St., Chicago, Ill.

Dayton Polish Co., 416 Bacon St., Dayton, O. "A-S-K."

Dennison Co., S. A., Winthrop, Mass.

Despal Chemical Co., 5229 Geary St., San Francisco, Cal. "French Maid."

Detroit Autocleno Mfg. Co., 915 W. Warren Ave., Detroit, Mich.

Detroit White Lead Works, 1960 Milwaukee Ave., E. Detroit, Mich. "Rogers Auto-Brite."

Diamond Holdfast Rubber Co., 10 Auburn Ave., Atlanta, Ga.

Diamond Polish Co., Brown Bldg., Washington, Pa.

Dielectric Mfg. Co., 224 S. Vandeventer Ave., St. Louis, Mo.

Dri-Klean-It—See American Automobile Accessories Co.

Drury Chemical Products Co., 71 W. Eagle St., Buffalo, N. Y. "Wondrelustre."

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie," "Re-Nu."

E-Z-Kleen—See Rexine Co.

Eberson-Lindsley Paint Co., 1820-32 Morgan St., St. Louis, Mo.

Eclat Mfg. Co., 3542 Michigan Blvd., Chicago, Ill.

Eclipse—See Willey Co.

Em-C-Lac Co., Smith St., Far Rockaway, N. Y.

Emsign Refining Co., 10703 Quebec Ave., Cleveland, O. "Polishem."

Esta-Brite—Queen City Specialty Co.

Ever-Shine—See Ferre Chemical Co.

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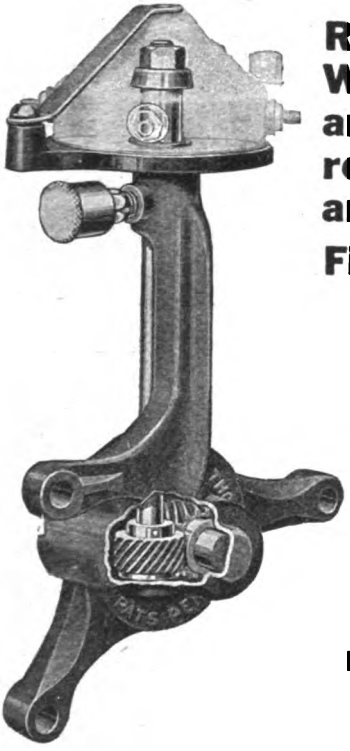
THOMAS

TIMER ELEVATOR

FOR

FORD CARS and TRUCKS

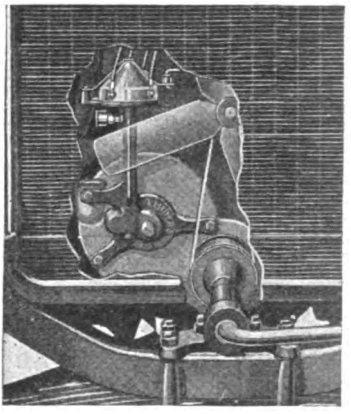


Raises the Timer and Wiring up out of the dirt and grease thereby correcting Ignition Troubles arising from the Timer.

Fits any Ford Timer.

Can be installed in 20 minutes without removing radiator

No Holes to Drill



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SHOWING ELEVATOR INSTALLED ON FORD

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DEPARTMENT OF SALES, 624 SOUTH MICHIGAN AVENUE, CHICAGO

FACTORY, WAUKEGAN, ILL.

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POLISHES, Automobile Body (Continued)

Easy Brite—See Rodriguez, R. E.
Fairchild & Bro., M. H., 6 W. Austin Ave., Chicago, Ill. "Royal Mist."
Farley & MacNeill, 105-07 Federal St., Boston, Mass. (Sole Distributors for Greenleaf Products Co., Boston, Mass. "Auto Lustre.")
Feasel's Laboratory, 9-13 Desbrosses St., New York, N. Y. (Sole Distributors for Golden Gate Mfg. Co., New York, N. Y.)
Ferro Chemical Co., 5656 Broadway, Chicago, Ill. "Ever-Shine."
Filmist—See Neu Metal Products Corp.
Fiebing Chemical Co., 238-40 Reed St., Milwaukee, Wis. "Victor."
Flint Varnish & Color Works, Hamilton & St. John Sts., Flint, Mich.
Ford's Auto Polish Co., 84 William St., New York, N. Y.
French Maid—See Despal Chemical Co.
Gammon, Arthur H., 1 Washington Sq., Haverhill, Mass. "Gee-Bee."
Gee Bee—See Gammon, Arthur H.
Gammon, Arthur H.—See Soule Co.
Gee Bee—See Soule Co.
Gee-Bee—See Green Bay Supply Co.
Gem—See Colgan Mfg. & Supply Co.
Gold Medal—See Hoffman Co.
Golden Gate Mfg. Co.—See Feasel's Laboratory.
Golden Rod—See American Textile Mfg. Co.
Golden Star Polish Mfg. Co., 815-23 E. 21st St., Kansas City, Mo. "Klean Shine."
Grady Mfg. Co., 250-56 Ely Ave., Long Island City, N. Y. "National."
Green Bay Supply Co., 518 Maine St., Green Bay, Wis. "Gee-Bee."
Greenleaf Products Co.—See Farley & MacNeill.
Greyhound—See Camden Chemical Mfg. Co.
Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker," "Brilliant Lustre." (See page 227.)
Hallett & Co., H. M., Ludington, Mich. "New Life."
Harbor Sales & Mfg. Co., 51 E. 42d St., New York, N. Y. "Slick-Shine."
Harvey Chemical Co., Wickliffe, O. "Lin-Lac."
Heaney Mfg. Co., 10-12 India Sq., Boston, Mass. "Revivo."
Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass. "Autoglo." (See page 417.)
Hoffman Co., Geo. Wm., 6 Cliff St., New York, N. Y. "Gold Medal."
Holbrook Co., 166 West End Ave., New York, N. Y.
Hollingshead Co., R. M., 113 N. Ninth St., Camden, N. J. "Nugloss."
Howard Dustless Duster Co., 290 Franklin St., Boston, Mass.
Howard Lubricants Co., 1105 Bedford Ave., Brooklyn, N. Y. "Rome."
Hy-Pol—See Adams & Elting Co.
I. C. U.—See Livingston Co.
Ilsley—Doubleday & Co., 229-31 Front St., New York, N. Y.
Imperial Oil Co., Merchants Exchange, St. Louis, Mo. "Marvin."
Indianapolis Paint & Color Co., 120-24 S. Illinois St., Indianapolis, Ind. "Auto-Gloss."
Ingham's—See Perfection Polish Co.
Instant Products Co., 779 Genesee St., Buffalo, N. Y. "Life-O-Wood."
International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."
Interstate Chemical Co., 667 Garfield Ave., Jersey City, N. J.
Jackels & Campbell Co., 1632 McGee St., Kansas City, Mo.
Jaffa Co., 2400 Superior Viaduct, Cleveland, O.
Jewel—See Wadsworth-Howland Co.
Johnson & Son, S. C., 1012 16th St., Racine, Wis. "Auto-Lak."
Johnston Paint Co., R. F., Pearl & Main Sts., Cincinnati, O.
K. K. K.—See Killen Kemical Ko.
Kantmar—See Woodtite Laboratories.
Kellerman, I., 674 Ninth Ave., New York, N. Y. "Crystal."
Kemoshyne Products, Copewood & Davis Sts., Camden, N. J.
Keystone Polish Co., 8 Avon Ave., Newark, N. J.
Killen Kemical Ko., Lansing, Mich. "K. K. K." (See page 263.)
Klean Shine—See Golden Star Polish Mfg. Co.
Kleano—See Tay-Miller Mfg. Co.
Lac-Mar Co., 1228 Tuscarawas St., E., Canton, O.
Larkins Chemical Co., 150 Catalina Ave., Pasadena, Cal. "Oil of Delight."
Le Doyen, Frank J., 627 Mangold St., Baltimore, Md. "Var-Noil."
Lee Mfg. & Chemical Co., Wm. E., 622 Cypress Ave., Kansas City, Mo. "Varnishine."
Liberty Chemical Works, 352 E. Illinois St., Chicago, Ill.
Life-O-Wood—See Instant Products Co.
Lin Lac—See Harvey Chemical Co.
Liquid Veneer—See Buffalo Specialty Co.
Livingston Co., 161 Day St., New Haven, Conn. "I. C. U."
Lord Polish Co., F. T., 37 Hovey Ave., Cambridge, Mass. "Sun-Glo."
Lucas & Co., John, 222-30 Race St., Philadelphia, Pa. "Auto-Klean."
Luster-O'all Co., 622 Hampshire St., Quincy, Ill.
Lustre Mfg. Co., 162 W. Austin Ave., Chicago, Ill.
Lyknu Polish Mfg. Co., 916 Forbes St., Pittsburgh, Pa.
Lyon & Healy, 52-58 Jackson Blvd., Chicago, Ill. "Zol."
McDougall-Butler Co., 6 Evans St., Buffalo, N. Y.
McGregory & Co., Fred H., 245 N. Main St., Decatur, Ill. "Mac's."
Mackenzie-Waterhouse Co., 828 Transportation Bldg., Chicago, Ill. "Silverine." (See page 1171.)
Mac's—See McGregory & Co.
Majestic—See Suydam Co.
Martin-Senour Co., 2510 Quarry St., Chicago, Ill.
Marvin—See Imperial Oil Co.
Mat's—See Weiss Polish Works.
Meadowcroft Chemical Co., Saybrook, Conn. "Rite Brite."
Milmore Corp., 215 W. Jefferson Blvd., South Bend, Ind.
Minard Co., Eames St., Framingham, Mass. "Ol-In-Ol."
Mirrorlike Mfg. Co., 203 Eighth St., Long Island City, N. Y. "Reviva."
Mobo—See Stanley Co.
Monarch—See Suydam Co.
Monogram—See New York Lubricating Oil Co.
Moore & Co., Benjamin, 231-33 Front St., Brooklyn, N. Y.
Moore Oil Refining Co., York St. & McLean Ave., Cincinnati, O. "Mooregloss."
Mooregloss—See Moore Oil Refining Co.
Morgan Mfg. Co., Court St., Keene, N. H. "Nuglos." (See page 751.)
Mormiles Co., 416 Sherman St., Chicago, Ill.
Motor Parts Co., Ambridge, Pa.

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The FORD KETCH-A-KICK

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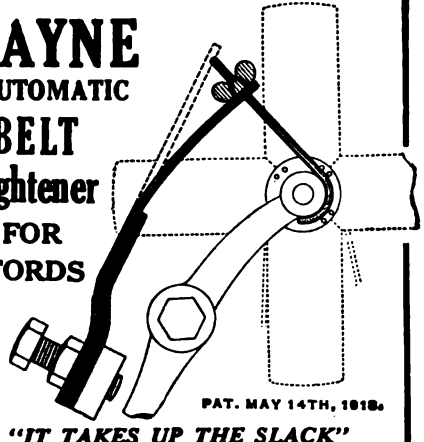

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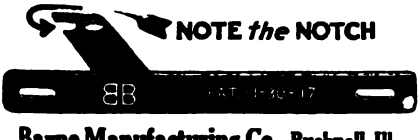
COMPLIES WITH THE LAW



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POLISHES, Automobile Body (Continued)

Nation Co., 332 W. 16th St., Los Angeles, Cal. (See page 1141.)

National—See Grady Mfg. Co.

National Chemical Co., Canal Fulton, O. "Quick-Shine."

National Rubber & Specialties Co., 4433-39 Chickering Ave., Cincinnati, O.

National Soap Co., 1910 Franklin St., Detroit, Mich.

Neu Metal Products Corp., Whipple Bldg., Binghamton, N. Y. "Filmist."

New Life—See Hallett & Co.

New-Lustre—See Crum Mfg. Co.

New Method Varnish Co., Realty Bldg., Elmira, N. Y. "Uncle Hiram's."

New York Lubricating Oil Co., 116 Broad St., New York, N. Y. "Monogram."

Nish—See Rath Mfg. Co.

Noble Piano Co., 4841 Woodward Ave., Detroit, Mich.

Norwesco—See Northwestern Chemical Co.

North State Polish Co., Piedmont Bldg., Charlotte, N. C. "U Can C."

Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 277.)

Noxal Polish Mfg. Co., 1233 Belmont Ave., Philadelphia, Pa.

Nu-Back Mfg. Co., 213-15 S. Second St., St. Louis, Mo. "Body-Nu."

Nuglos—See Morgan Mfg. Co.

Nugloss—See Hollingshead Co.

O-Cedar—See Channel Chemical Co.

O-Lustre Specialty Co., 1805½ Main St., Parsons, Kan.

Oil of Delight—See Larkins Chemical Co.

Oilsum—See White & Bagley Co.

Ol-In-Ol—See Minard Co.

Old English—See Boyle Co.

On E-Z—See Sutorius Auto Top Co.

Optimus Mfg. Co., 193 Hanover St., Boston, Mass.

Outlook Co., 5513 Euclid Ave., Cleveland, O.

Panol—See Panvar Co.

Panvar Co., Bulletin Bldg., Philadelphia, Pa., "Panol."

Patterson-Sargent Co., E. 38th & St. Clair Sts., Cleveland, O. "B. P. S."

Paul & Co., J. C., 930 Roscoe St., Chicago, Ill. "Burnishine."

Peerless—See Columbus Varnish Co.

Peerless Mineral Products Co., 15 Whitehall St., New York, N. Y.

Perfection Polish Co., Waverly, N. Y. "Ingham's."

Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. "Cleanit." (See page 317.)

Perma-Loc Mfg. Co., Wilkes-Barre, Pa. (See page 695.)

Pimbley Paint & Glass Co., 213 S. Sixth St., St. Joseph, Mo. "Auto-Newer."

Pioneer—See National Rubber & Specialties Co.

Pioneer Mfg. Co., 10309 Harvard Ave., Cleveland, O. "Shino."

Polac Co., 73 Tremont St., Boston, Mass.

Polishem—See Ensign Refining Co.

Poughkeepsie Utilities Corp., 38 Winnikee Ave., Poughkeepsie, N. Y. "Utility."

Povar—See American Povar Corp.

Pratt Mfg. Co., W. A., 1964 Broadway, New York, N. Y. "Clean-O-Shine."

Puritan Soap Co., 500 Exchange St., Rochester, N. Y.

Pyn-Ol—See American Textile Mfg. Co.

Queen City Specialty Co., Johnston Bldg., Cincinnati, O. "Esta-Bright."

Quick-Shine—See National Chemical Co.

Quickwork—See Standard Varnish Works.

Rapid—See Shannon, T. R.

Rath Mfg. Co., Hedley & Richmond Sts. Philadelphia, Pa. "Nish."

Ray Chemical Co., 53 Halsey St., Newark, N. J. "Rayfinish."

Ray Mfg. Co., 1627 Columbia Ave., Philadelphia, Pa.

Rayfinish—See Ray Chemical Co.

Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.

Red Devil Mfg. Co., 2807 Locust St., St. Louis, Mo.

Red Line, Inc., Grand Rapids, Mich. (See page 1047.)

Refine Co., Sheboygan, Mich.

Re-Nu—See Cincinnati Oil Works Co.

Reflectal—See Billings-Chapin Co.

Rents Co., C. J., Greenwood Bldg., Cincinnati, O.

Reuss Polish Co., Pierce Bldg., Milwaukee, Wis.

Reviva—See Mirrorlike Mfg. Co.

Revivo—See Heaney Mfg. Co.

Rex—See Armiger Chemical Co.

Rexine Co., Pennsylvania & River Sts., Sheboygan, Wis. "E-Z-Kleen."

Rie-Nie Re-Nu—See Durkee-Atwood Co.

Rite-Brite—See Meadowcroft Chemical Co.

Roberts Co., C. F., 1718 Brush St., Detroit, Mich. "Splendola."

Robertson Products Co., Theo. B., 700-04 W. Division St., Chicago, Ill. "20th Century."

Rodrigues, R. E., 56-58 Warren St., New York, N. Y. "Exy Brite," "Simplex."

Rogers Auto-Brite—See Detroit White Lead Works.

Roglo—See Ross Gloss Co.

Rome—See Howard Lubricants Co.

Ross Gloss Co., Auburndale, Mass. "Roglo."

Royal Mist—See Fairchild & Bro.

Rub-On—See Auto Products Mfg. Co.

S. & B.—See Uno Mfg. Co.

St. Cloud Drug Co., Seventh & Arch Sts., Philadelphia, Pa. "V-C."

Sani-Mist Co., 16 Home St., New London, Conn.

Sanozone Chemical Co., 5 N. 20th St., Philadelphia, Pa.

Satin Spray Co., 113 Lakeview Ave., Cambridge, Mass.

Sawyer Oil Co., Howard B., 62 Long Wharf, Boston, Mass. "Blue Ribbon."

Scientific Mfg. Co., 426 Prescott Ave., Scranton, Pa. "All-in-One."

Shannon, T. R., 19 Lorraine St., Hartford, Conn. "Rapid."

Shi-Nup Products Co., 1130 Main St., Racine, Wis.

Shino—See Pioneer Mfg. Co.

Shinauto Mfg. Co., 1423 N. Illinois St., Indianapolis, Ind.

Silverine—See Mackenzie-Waterhouse Co.

Simoniz—See Simons Mfg. Co.

Simons Mfg. Co., 2121 Michigan Ave., Chicago, Ill. "Simoniz."

Simplex—See Rodrigues, R. E.

Slick-Shine—See Harbor Sales & Mfg. Co.

Slikup—See Arnold, N. B.

Sole Mfg. Co., 143 Chambers St., New York, N. Y. "Cleen Shyne."

Sparkler Mfg. Co., 108 Main St., Fairmount, Ind.

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Prompt Deliveries

For years we have satisfied the most exacting demands of the leading car manufacturers. The ACCURACY of a modern HEAT TREATMENT PLANT and the CONTROL exercised by a fully equipped CHEMICAL LABORATORY have been a means to this end. We invite your inquiries. Let us figure on YOUR requirements.

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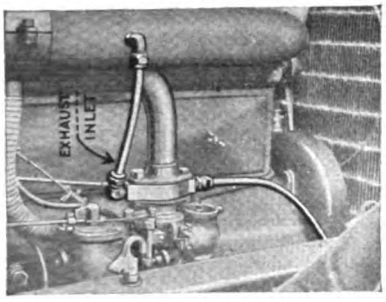

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Cleaner combustion. More power. More miles to the gallon.

We spray the gas onto hot metal and deliver vapor ready to mix with the air supply.

It works. It saves.

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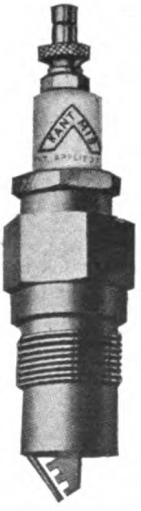

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POLISHES, Automobile Body (Continued)

Splendola—See Roberts Co.
Standard Varnish Works, 90 West St., New York, N. Y. "Quickwork."
Stanley Co., John T., 30th St. & North River, New York, N. Y. "Mobo." (See page 871.)
Starclean—See Alder Chemical Co.
Sterno Corp., New York, N. Y. (See page 1147.)
Straight Line Mfg. Co., 27 Thames St., New York, N. Y. "Superlustre."
Sun-Glo—See Lord Polish Co.
Sunshine—See Thumb, E. W.
Super-Glos Mfg. Co., 1091 Mission St., San Francisco, Cal.
Superlustre—See Straight Line Mfg. Co.
Sutherland & Co., P., 232 Milk St., Boston, Mass.
Sutorius Auto Top Co., 621-23 Third Ave. S., Minneapolis, Minn. "On E-Z."
Suydam Co., M. B., 61st & Butler Sts., Pittsburgh, Pa. "Monarch," "Majestic."
T-M Gloss—See Tay-Miller Mfg. Co.
Tay-Miller Mfg. Co., 20th & Market Sts., Philadelphia, Pa. "T-M Gloss," "Kleano."
Thumb, E. W., 872 Orleans St., Chicago, Ill. "Sunshine."
Tobey Furniture Co., 200 E. Grand Ave., Chicago, Ill.
Torkelson Mfg. Co., 414 Selby Ave., St. Paul, Minn.
20th Century—See Robertson Products Co.
U Can C—See North State Polish Co.
U-Sav-Your Mfg. Co., 12 Perkins Ave., Warren, Mass. (See page 725.)
Ulrich & Co., 363-65 E. North St., Buffalo, N. Y. "A-O-K."
Uncle Hiram's—See New Method Varnish Co.
Uno Mfg. Co., 6433 Ravenswood Ave., Chicago, Ill. "S. & B."
Utility—See Poughkeepsie Utilities Corp.
V-C—See St. Cloud Drug Co.
Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Varni-Brite."
Vaporine Co., 101 S. Wells St., Chicago, Ill.
Var-Noil—See Le Doyen, Frank J.
Varni-Brite—See Van Cleef Bros.
Varni-Shine Co., Columbus, O.
Varnishine—See Lee Mfg. & Chemical Co.
Victor—See Fiebing Chemical Co.
Victrolene Co., 39 Pearl St., Boston, Mass.
Visco Motor Oil Co., 2104 Superior Ave. N. W., Cleveland, O.
Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."
Waxit Mfg. Co., Plymouth Bldg., Minneapolis, Minn.
Weiss Polish Works, 216 S. Winchester Ave., Chicago, Ill. "Mat's."
Westfield Chemical Co., Main St., Westfield, Mass. "Zit."
White & Bagley Co., Worcester, Mass. "Oilzum." (See page 663.)
Whitman, Bayard J., 200 Devonshire St., Boston, Mass. "Blue Stripe."
Willey Co., C. A., 14th & Hancock Sts., Long Island City, N. Y. "Eclipse."
Wilson-Imperial Co., 115 Chestnut St., Newark, N. J.
Wonder-Mist—See Cunningham & Berrien.
Wondrelustre—See Drury Chemical Products Co.
Woodtite Laboratories, Modesto, Cal. "Kantmar."
Wonder Worker—See Hall-Thompson Co.
Xint Mfg. Co., 209 Woodward St., Cincinnati, O.
Zinsser & Co., W., 195 William St., New York, N. Y. "Bulls-Eye."
Zit—See Westfield Chemical Co.
Zol—See Lyon & Healy.

POLISHES, BODY—See Polishes, Automobile Body

POLISHES, BRASS—See Polishes, Metal

POLISHES, Metal

A-1 Mfg. Co., Front & Wharton Sts., Philadelphia, Pa.
A-O-K—See Ulrich & Co.
A-S-K—See Dayton Polish Co.
Acme Polish Co., 7227 Mt. Vernon St., Pittsburgh, Pa. "Ayrolite."
Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Shimite." (See page 267.)
Ajaco—See Alsdorf Corp.
Ajax—See Crowell Chemical Co.
Alsdorf Corp., A. J., 404 S. Wells St., Chicago, Ill. "Ajaco."
Amalie—See Sonneborn Sons.
American Metal Polish Co., 89 Winslow Ave., W., West Somerville, Mass. "North Star," "Meyers."
American Paint Products Co., 736 S. Wabash Ave., Chicago, Ill.
Americus Products Mfg. Co., 627 W. Canfield Ave., Detroit, Mich.
Anchor—See Hoffman Paint & Varnish Co.
Anchor—See New England Oil, Paint & Varnish Co.
Arco Co., Euclid Ave. & E. 65th St., Cleveland, O.
Armiger Chemical Co., 2155 W. Austin Ave., Chicago, Ill. "Rex."
Army & Navy—See Grady Mfg. Co.
Arnold, N. B., 1 Sigourney St., Brooklyn, N. Y. "Slikup."
Arnstein, Eugene, 45 W. 26th St., Chicago, Ill. "Shine-All."
Ayrolite—See Acme Polish Co.
Baum's Castorine Co., 104 N. George St., Rome, N. Y.
Be-Be-Co.—See Boston Blacking Co.
Beacon—See Cincinnati Oil Works Co.
Ben Hur Metal Polish Co., 206 E. Market St., Crawfordsville, Ind.
Bertrams—See New Jersey Paint Works.
Best of All—See Essex Paint & Chemical Co.
Blue Ribbon—See International Metal Polish Co.
Boston Blacking Co., Third & Potter Sts., Cambridge, Mass. "Be-Be-Co."
Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.
Brass Nu—See Nu-Back Mfg. Co.
Brett Dimmer Co., A. H., Mason City, Ia. "C. C."
Bridgeport Wood Finishing Co., New Milford, Conn. "Metalshine."
Brigstocke, M. K., 1027-29 Park St., Peekskill, N. Y.
Briteline—See Harlem Supply Co.
Burnishine—See Paul & Co.
C. C.—See Brett Dimmer Co.
Callery & Co., W. W., 188 36th St., Pittsburgh, Pa. "Winterton."
Camden Chemical Mfg. Co., 18th & Mickle Sts., Camden, N. J. "Greyhound."
Campbell Glass & Paint Co., St. Louis, Mo. "Star."
Car-Brite—See Lord Polish Co.

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WILKINSBURG STATION
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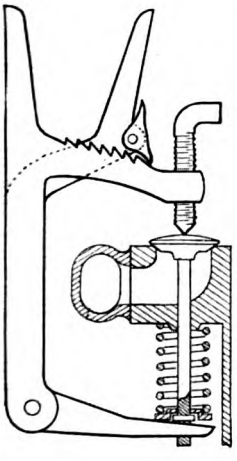
Standard top parts for all batteries—specializing "Bronze Clamps"



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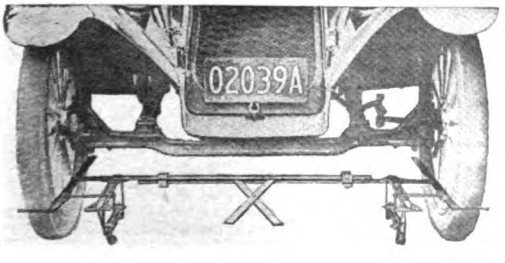

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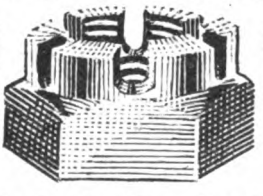

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CASTLE NUTS
Specials

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POLISHES, Metal (Continued)

Chemical Supply Co., 2450 Canal Rd., Cleveland, O.

Cincinnati Oil Works Co., 525 Eggleston Ave., Cincinnati, O. "Beacon."

Cleaner Mfg. Co., 2842 Olive St., St. Louis, Mo. "Polishine."

Cleanola Co., Fulton Bldg., Pittsburgh, Pa. "Spe-De-Shyne."

Colgan Mfg. & Supply Co., 118 Maiden Lane, New York, N. Y. "Crescent."

Columbia—See Stevens, Frederic B.

Crescent—See Colgan Mfg. & Supply Co.

Crowell Chemical Co., 9 Oxford Terrace, Beverly, Mass. "Oxford," "Ajax."

Cudahy Packing Co., 111 W. Monroe St., Chicago, Ill. "Parrot."

Curry Bros. Oil Co., 253-55 Franklin St., Boston, Mass. "Superba."

Dayton Polish Co., 416 Bacon St., Dayton, O. "A-S-K."

Detroit White Lead Works, 1960 Milwaukee Ave., E., Detroit, Mich. "Rogers."

Diamond Polish Co., Brown Bldg., Washington, Pa.

Dielectric Mfg. Co., 224 S. Vandeventer Ave., St. Louis, Mo.

Dragon—See Paul & Co.

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."

E-Fec-Tiv—See Permatite Mfg. Co.

Em-C-Lac Co., Smith St., Far Rockaway, N. Y.

Ericka Mfg. Co., 882 Liberty St., Springfield, Mass. "Shineaul."

Essex Paint & Chemical Co., Essex, Conn. "Best of All."

Evans & Bro., 3514 Juniata St., St. Louis, Mo.

Fiebing Chemical Co., 238-40 Reed St., Milwaukee, Wis. "Lusterine."

Flash Chemical Co., 160-70 Second St., Cambridge, Mass.

G. W.—See Great Western Oil Co.

Garratt-Callahan Co., 37 S. Clinton St., Chicago, Ill.

German—See Sutherland & Co.

Glittershine—See Grady Mfg. Co.

Globe—See Raimes & Co.

Gold Medal—See Hoffman Co.

Golden Glitter—See Grady Mfg. Co.

Golden Star Polish Mfg. Co., 815-23 E. 21st St., Kansas City, Mo.

Goldshine—See Van Tillburg Oil Co.

Grady Mfg. Co., 250-56 Ely Ave., Long Island City, N. Y. "Glittershine," "Scouree," "Army & Navy," "Golden Glitter," "Summershine."

Great Western Oil Co., 2855 E. 87th St., Cleveland, O. "G. W."

Greyhound—See Camden Chemical Mfg. Co.

Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker," "Nick-E-Lo." (See page 227.)

Harlem Supply Co., Knickerbocker Bldg., Baltimore, Md. "Briteline."

Harris Oil Co., A. W., Providence, R. I. "Scouree." (See page 665.)

Heaney Mfg. Co., 10-12 India Sq., Boston, Mass. "Revivo."

Hinds & Coon, 124-26 Pearl St., Boston, Mass. "Ruby-Rub."

Hoffman Co., Geo. Wm., 6 Cliff St., New York, N. Y. "Gold Medal." "U. S."

Hoffman Paint & Varnish Co., 8 Medford St., Boston, Mass. "Anchor."

Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whiz."

I. C. U.—See Livingston Co.

Imperial—See Rath Mfg. Co.

Imperial Oil Co., Merchants Exchange, St. Louis, Mo. "Marvin."

Indianapolis Paint & Color Co., 120-24 S. Illinois St., Indianapolis, Ind. "Metal-Brite."

International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."

Jewel—See Wadsworth-Howland Co.

Jiffy—See Staedler, Chas.

Johnston Paint Co., R. F., Pearl & Main Sts., Cincinnati, O.

K. K. K.—See Killen Kemical Ko.

Kemoshyne Products, Copewood & Davis Sts., Camden, N. J.

Kettler Brass Mfg. Co., Spring & White Sts., Houston, Tex. "Qck Work."

Killen Kemical Ko., Lansing, Mich. "K. K. K." (See page 263.)

Lee Mfg. & Chemical Co., Wm. E., 622 Cypress Ave., Kansas City, Mo.

Liberty Chemical Works, 352 E. Illinois St., Chicago, Ill.

Livingston Co., 161 Day St., New Haven, Conn. "I. C. U."

Lord Polish Co., F. T., 37 Hovey Ave., Cambridge, Mass. "Lumino," "Car-Brite."

Lumino—See Lord Polish Co.

Lumo—See North American Polish Co.

Lusterine—See Fiebing Chemical Co.

Lynch, Alonzo K., 310-12 Flushing Ave., Brooklyn, N. Y. "Zee-Ko."

McGregory & Co., Fred H., 245 N. Main St., Decatur, Ill.

McLean-Jones Oil & Supply Co., 40 Court St., Boston, Mass.

Mac's—See McGregory & Co.

Martin-Senour Co., 2510 Quarry St., Chicago, Ill.

Marvin—See Imperial Oil Co.

Maxine—See Rexine Co.

Metal-Brite—See Indianapolis Paint & Color Co.

Metalshine—See Bridgeport Wood Finishing Co.

Meyers—See American Metal Polish Co.

Miller Oil Products Corp., Bloomfield, N. J.

Milmore Corp., 215 W. Jefferson Blvd., South Bend, Ind.

Mirrolike Mfg. Co., 203 Eighth St., Long Island City, N. Y.

Mobo—See Stanley Co.

Monarch—See Suydam Co.

Moonshine—See Winn, Wm. R.

Moore Oil Refining Co., York St. & McLean Ave., Cincinnati, O. "Mooreshine."

Mooreshine—See Moore Oil Refining Co.

Morgan Mfg. Co., Court St., Keene, N. H. "Morgan-brite." (See page 751.)

Morganbrite—See Morgan Mfg. Co.

Nation Co., 332 W. 16th St., Los Angeles, Cal. (See page 1141.)

National Rubber & Specialties Co., 4432-39 Chickering Ave., Cincinnati, O.

National Soap Co., 1910 Franklin St., Detroit, Mich. "Quick Work."

New England Oil, Paint & Varnish Co., Everett, Mass. "Anchor."

New Jersey Paint Works, Tremont & Wayne Sts., Jersey City, N. J. "Bertrams."

Nick-E-Lo—See Hall-Thompson Co.

Noble Piano Co., 4841 Woodward Ave., Detroit, Mich.

North American Polish Co., 1237 Superior Ave., Cleveland, O. "Lumo."

North Star—See American Metal Polish Co.

Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 277.)

Norwesco—See Northwestern Chemical Co.

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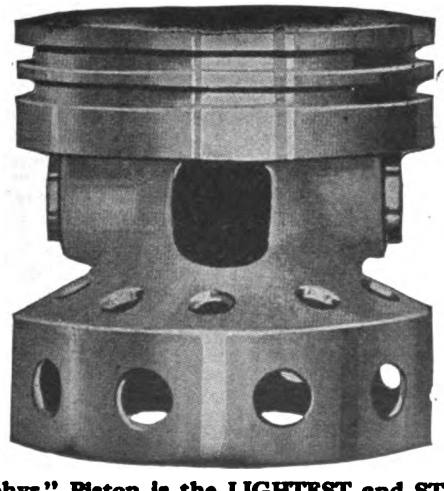

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POLISHES, Metal (Continued)

Noxal Polish Mfg. Co., 1233 Belmont Ave., Philadelphia, Pa.

Nu-Back Mfg. Co., 213-15 S. Second St., St. Louis, Mo. "Brass-Nut."

O. H. M.—See Robertson Products Co.

Oxford—See Crowell Chemical Co.

Parker Refining Co., 1307 W. 11th St., Cleveland, O.

Parrot—See Cudahy Packing Co.

Patterson Lubricating Co., 114 Broad St., Boston, Mass.

Paul & Co., J. C., 930 Roscoe St., Chicago, Ill. "Burnishine," "Dragon."

Perfection—See Warren Refining & Chemical Co.

Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."

Pioneer—See National Rubber & Specialties Co.

Pioneer—See Northwestern Chemical Co.

Poleshine—See Cleaner Mfg. Co.

Puritan Soap Co., 500 Exchange St., Rochester, N. Y.

Qck Work—See Kettler Brass Mfg. Co.

Quick Work—See National Soap Co.

Raimes & Co., 50 Ferry St., New York, N. Y. "Globe."

Rath Mfg. Co., Hedley & Richmond Sts., Philadelphia, Pa. "Imperial."

Raydo—See Ulrich & Co.

Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.

Red Cross—See Robertson & Co.

Reid Mfg. Co., W. W., 17 Caldwell St., Boston, Mass.

Revivo—See Heaney Mfg. Co.

Rex—See Armiger Chemical Co.

Rexine Co., Pennsylvania & River Sts., Sheboygan, Wis. "Maxine."

Rie-Nie—See Durkee-Atwood Co.

Robertson & Co., 1141 W. Madison St., Chicago, Ill. "Red Cross."

Robertson Products Co., Theo. B., 700-04 W. Division St., Chicago, Ill. "XX."

Rogers—See Detroit White Lead Works.

Ruby-Rub—See Hinds & Coon.

Scouree—See Grady Mfg. Co.

Scouree—See Harris Oil Co.

Shinal—See Adams & Elting Co.

Shine-All—See Arnstein, Geo. W.

Shineaul—See Ericka Mfg. Co.

Shinite—See Adams & Elting Co.

Skat Co., 791 Park St., Hartford, Conn.

Slick-Shine Victory—See Harbor Sales & Mfg. Co.

Solarine Co., 152-55 N. Carpenter St., Chicago, Ill.

Solshine Mfg. Co., 17 Caldwell St., Boston, Mass.

Sonneborn Sons, L., 262 Pearl St., New York, N. Y. "Amalie."

Spe-De-Shyne—See Cleanola Co.

Spear's Sons Co., Alden, 140 Sixth St., Boston, Mass.

Staedler, Chas., 190 Claremont Ave., Verona, N. J. "Jiffy."

Stanley Co., John T., 30th St. & North River, New York, N. Y. "Mobo." (See page 871.)

Star—See Campbell Glass & Paint Co.

Stay-Bright Lacquer Co., 58 W. Washington St., Chicago, Ill.

Summershine—See Grady Mfg. Co.

Superba—See Curry Bros. Oil Co.

Sutherland & Co., P., 232 Milk St., Boston, Mass. "German."

Suydam Co., M. B., 61st & Butler Sts., Pittsburgh, Pa. "Monarch."

Sweet, Charles F., 247 State St., Hartford, Conn.

Syco—See Symonds Co.

Symonds Co., Joseph H., Westfield, Mass. "Syco."

Trafton Co., F. M., 176 Federal St., Boston, Mass.

Ulrich & Co., 363-65 E. North St., Buffalo, N. Y. "A-O-K," "Raydo."

U. S.—See Hoffman Co.

Uno Mfg. Co., 6433 Ravenswood Ave., Chicago, Ill.

Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."

Warren Refining & Chemical Co., Cleveland, O. "Perfection."

Whiz—See Hollingshead Co.

Winn, Wm. R., 143 Maiden Lane, New York, N. Y. "Moonshine."

Winterton—See Callery & Co.

Wonder Worker—See Hall Thompson Co.

Woodison Co., E. J., 7415 St. Aubin St., Detroit, Mich.

XX—See Robertson Products Co.

Yale—See Rostand Mfg. Co.

Zee-Ko—See Lynch, Alonzo K.

POLISHES, NICKEL—See Polishes, Metal

POLISHES, SILVER—See Polishes, Metal

POLISHING CLOTHS—See Wipers

POLISHING COMPOUNDS—See Compounds, Buffing and Polishing

PONTOONS, Seaplane

Hamilton Aero Mfg. Co., Milwaukee, Wis.

Palmer-Simpson Corp., Saranac Lake, N. Y.

Reliance Motor Boat Co., 207th St. & Harlem River, W., New York, N. Y.

Rogers Construction Co., Gloucester City, N. J.

Walden-Butler Co., 281-89 Butler St., Brooklyn, N. Y.

POPPET VALVES—See Valves, Engine Poppet

PORCELAIN

Artistic Porcelain Co., Trenton, N. J.

Empire China Works, 142-56 Green St., Brooklyn, N. Y.

Frenchtown Porcelain Co., Trenton, N. J. (See page 733.)

General Porcelain Co., East Liverpool, O.

Hartford Faience Co., Hartford, Conn.

Imperial Porcelain Works, Mulberry St. & New York Ave., Trenton, N. J.

J. D.—See Jeffery-Dewitt Co.

Jeffery-Dewitt Co., Butler Ave. & G. T. Ry., Detroit, Mich. "J-D."

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PORTABLE BUFFERS—See Drills, Electric Portable

PORTABLE BUILDINGS—See Garages

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PORTABLE STEEL CRADLES—See Cradles, Steel Portable

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POWER TRANSMITTING ATTACHMENTS—See Attachments, Power Transmitting

PRECISION LATHES—See Lathes, Bench

PRESERVERS, Aviators' Life

Ever-Warm—See National Life Preserver Co.

Ilanastik—See Robinson-Roders Co.

Natural Life Preserver Co., 11 Broadway, New York, N. Y. "Ever-Warm."

Robinson-Roders Co., 27-33 N. J. R. R. Ave., Newark, N. J. "Ilanastik."

PRESSED STEEL AXLE HOUSINGS—See Housings, Pressed Steel

PRESSED STEEL BRAKE DRUMS—See Drums, Brake

PRESSED STEEL FAN PULLEYS—See Pulleys, Pressed Steel Fan

PRESSED STEEL FRAMES—See Frames, Pressed Steel

PRESSED STEEL HUB FLANGES—See Flanges, Hub

PRESSED STEEL PARTS—See Stampings

PRESSED STEEL STEP HANGERS—See Hangers, Pressed Steel Step

PRESSED STEEL WHEELS—See Wheels, Pressed and Wrought

PRESSES, Arbor

Atlas Press Co., 1900 N. Pitcher St., Kalamazoo, Mich.

Barnes Co., W. F. & John, 301 S. Water St., Rockford, Ill.

Bartlett, Edwin E., 41 Crown St., Nashua, N H. "Greenerd."

Canedy-Otto Mfg. Co., Chicago Heights, Ill.

Columbia Mfg. Co., Belleville, Ill.

Crane Puller Co., Arlington, Mass. (See page 743.)

Dearborn Equipment Co., Kalamazoo, Mich. (See page 403.)

Detroit Garage Equipment Co., 406 E. Jefferson Ave., Detroit, Mich.

Greb Co., 195 State St., Boston, Mass. (See page 743.)

Geier Co., P. A., 105th St. & Elk Ave., Cleveland, O. (See page 695.)

Greenerd—See Bartlett, Edwin E.

Hydraulic Press Mfg. Co., Mt. Gilead, O.

Lourie Mfg. Co., Harvard Pk., Springfield, Ill.

Lucas Machine Tool Co., 523 E. 99th St., Cleveland, O.

M. E. C.—See Manufacturers Equipment Co.

Manley Mfg. Co., York, Pa. (See page 327.)

Manufacturers Equipment Co., Waller Ave. & Fillmore St., Chicago, Ill. "M. E. C."

Metalwood Mfg. Co., 3450 Wight St., Detroit, Mich.

Mills Mfg. Co., Sabina, O.

Myers Machine Tool Co., Second & Chestnut Sts., Columbia, Pa.

Nicholson & Co., W. H., 12 Oregon St., Wilkes-Barre, Pa.

Niles-Bement-Pond Co., 111 Broadway, New York, N. Y.

Post Garage & Repair Shop, Amos. Church St., Catskill, N. Y.

Watson-Stillman Co., 193 Fulton St., New York, N. Y.

Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 735.)

Whitney Mfg. Co., R. S., 74 Nichols St., Lewiston, Me.

Wilmarth & Morman Co., 1179 Monroe Ave., N. W., Grand Rapids, Mich.

Wilson, K. R., 10-16 Lock St., Buffalo, N. Y. (See page 611.)

PRESSES, Bench Straightening

Atlas Press Co., 1900 N. Pitcher St., Kalamazoo, Mich.

Chambersburg Engineering Co., Derbyshire St., Chambersburg, Pa.

Continental Auto Parts Co., 1807 E. 17th St., Columbus, Ind. (See page 419.)

Dearborn Equipment Co., Kalamazoo, Mich. (See page 403.)

Detroit Garage Equipment Co., 406 E. Jefferson Ave., Detroit, Mich.

Geier Co., P. A., 105th St. & Elk Ave., Cleveland, O. (See page 695.)

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Lourie Mfg. Co., Harvard Pk., Springfield, Ill.
Pletz & Sons, Carl, 717 Sycamore St., Cincinnati, O.
Springfield Machine Tool Co., Southern Ave. & P. C. & St. L. Ry., Springfield, O.
Towsley Co., John T., Gest & Evans Sts., Cincinnati, O.
Watson-Stillman Co., 198 Fulton St., New York, N. Y.

PRESSES, BROACHING — See Machines, Broaching

PRESSES, Bushing Swedging

Burr & Sons, J. T., 429 Kent Ave., Brooklyn, N. Y.
Greb Co., 195 State St., Boston, Mass. (See page 743.)
Holmes, George L., 1733 Broadway, New York, N. Y. (Eastern Distributer for Greb Presses.) (See page 1187.)

PRESSES, CRANKSHAFT STRAIGHTENING—See Presses, Bench Straightening

PRESSES, DEALERS IN—See Machinery, Dealers in

PRESSES, FORCING—See Presses, Arbor

PRESSES, RIM—See Presses, Truck Rim

PRESSES, Storage Battery Plate

(For straightening bent or buckled plates or forcing the active materials into place)

Ambu—See American Bureau of Engineering.
American Bureau of Engineering, Michigan Ave. & 16th St., Chicago, Ill. "Ambu." (See page 485.)

PRESSES, STRAIGHTENING—See Presses, Bench Straightening

PRESSES, Tire

Elmes Engineering Works, Chas. F., 235 N. Morgan St., Chicago, Ill.
Excelsior Tool & Machine Co., 31st St. & Ridge Ave., East St. Louis, Ill.
Hydraulic Press Mfg. Co., Mt. Gilead, O.
Lourie Mfg. Co., Harvard Pk., Springfield, Ill.
Southwark Foundry & Machine Co., 430 Washington Ave., Philadelphia, Pa.
Watson-Stillman Co., 198 Fulton St., New York, N. Y.

PRESSES, Truck Rim Applying

Excelsior Tool & Machine Co., 31st St. & Ridge Ave., East St. Louis, Ill.

PRESSINGS, METAL—See Stampings

PRESSURE CONTROLLERS, VULCANIZER—See Controllers, Vulcanizer Steam Pressure

PRESSURE LUBRICATORS—See Lubricators, Pressure

PRESSURE REGULATORS—See Regulators, Acetylene

PRESSURE SYSTEM TIRE CONNECTIONS—See Connections, Air System Tire

PRESSURE OR REDUCING VALVES—See Regulators, Tank Pressure

PREVENTERS, GLARE—See Dimmers, Headlight

PREVENTERS, RUST—See Compounds, Rust Preventing and Removing

PRICK PUNCHES—See Punches, Center Prick and Drift

PRIMARY CABLE—See Wire, Insulated

PRIMER BUSHINGS—See Bushings, Starter or Primer Attaching

PRIMERS, Aircraft Wood and Metal

Valentine & Co., 456 Fourth Ave., New York, N. Y. "Valspar."
Valspar—See Valentine & Co.

PRIMERS, Engine

(See Heaters, Mixture; also Mixers, Fuel; also Starters)

A-V-G.—See Cox Brass Mfg. Co.
B. & L.—See Van Buren Co.
Bailey Co., W. J., Newark, N. J. "C. B."
Bay State Pump Co.—See Shultis Automotive Corp.
Bear Mfg. Co., E. 17th St. & First Ave., Rock Island, Ill.
Bourse—See Randall-Faichney Co.
Buckeye—See Central Brass & Fixture Co.
C. B.—See Bailey Co.
Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."
Colonial Auto & Supply Co., 101 W. 66th St., New York, N. Y.
Copley—See Shultis Automotive Corp.
Cox Brass Mfg. Co., Albany, N. Y. "A-V-G." (See page 261.)
De-Roy Accessories Co., 827 Main Ave. W., Spokane, Wash.
Detroit Modern Mfg. Co., 33-39 Woodward Ave., Detroit, Mich. "Sure-Shot."
Eck Vapor & Primer Co., 12 Vick Pk., Rochester, N. Y.
Engineering Equipment Co., State Life Bldg., Indianapolis, Ind.
E. Z. Hickey—See Angola Electric Mfg. Co.
Hagstrom Bros. Mfg. Co., Lindsborg, Kans.
Ideal Auto Primer Corp. of Los Angeles, 705½ W. Eighth St., Los Angeles, Cal.
Ideal Brass Works, 560 N. Elder Ave., Indianapolis, Ind.
Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. "Prime-ur." (See page 177.)
Interstate Electric Co., Baronne & Perdido Sts., New Orleans, La.
Jorgensen Mfg. Co., Waupaca, Wis. (See page 737.)
Longest Bros. Co., 725-29 S. Third St., Louisville, Ky.
Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O.

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JORGENSEN VAPOR PRIMER

The Jorgensen Vapor Primer may be used on any type of motor—automobile, truck, tractor, marine or stationary engine. It is strictly mechanical in operation and will vaporize any grade of fuel at any temperature.

Fig. 1

Fig. 1 shows the connection used when the car is equipped with a vacuum tank. Fits any style of vacuum tank.

The Jorgensen Vapor Primer is quickly and easily installed. The pump mounting is attached to the instrument board or dash. The manifold is tapped with a 1/8 inch pipe thread tap to take the injector nozzles. On 8 and 12 cylinder motors it is only necessary to install the primer outfit on one block.

Fig. 2

Fig. 2 shows the special connection for the Ford car. It replaces the regular one that connects the gas line to the carburetor.

In ordering be sure to specify ***type of motor, style of pump, style of connection*** and if wanted with gas line connection (Fig. 3) O. D. of tubing. Each outfit is furnished complete with all necessary fittings, tubing, etc. to install. List price $5.00 less trade discounts. Full directions for installing with each outfit.

Fig. 3

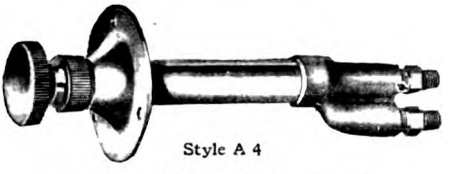
Fig. 3 shows the connection for obtaining the gas supply for the primer by cutting into the line leading to the carburetor. This connection furnished for 1/4 inch, 5/16 inch or 3/8 inch O.D. Tubing.

Style A-2

May be installed on any type of metal dash. Especially recommended to manufacturers for factory installation.

Style A-3

For installation on trucks or cars that have no instrument board. Also used on the earlier model Ford cars.



Style A 4

May be used with either metal or wood instrument boards. The most popular type for installation by garage and repairmen.

We also manufacture a complete line of high-grade machined brass motor fittings—Sediment Traps, Pet-Cocks, Priming Cups, etc., also Motor Tappets.

Jorgensen Mfg. Co., Waupaca, Wis.

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PRIMERS, Engine (Continued)

Maltby Auto Specialty Co., 303 W. Main St., Battle Creek, Mich.

Master Primer Co., 34 E. Larned St., Detroit, Mich. (See page 739.)

Motor Cooling System Co., Charles & Lombard Sts., Baltimore, Md.

Perkins Appliance Co., 4 Birnie Ave., Springfield, Mass. "Victory."

Peru Brass & Mfg. Co., Peru, Ind.

Prima—See Turner Brass Works.

Prime-ur—See Imperial Brass Mfg. Co.

Rajah Auto Supply Co., Locust Ave. & Nelson St., Bloomfield, N. J.

Randall-Falchney Co., 76 Atherton St., Boston, Mass. "Bourse."

Shultis Automotive Corp., 16-22 W. 61st St., New York, N. Y. (Sole Distributors for Bay State Pump Co., So. Boston, Mass. "Copley.") (See page 609.)

Smith, Fred, 56 W. Park Pl., Stamford, Conn.

Sure-Shot—See Detroit Modern Mfg. Co.

Sure Start Primer Co., 18 W. 34th St., New York, N. Y.

Turner Brass Works, Sycamore, Ill. "Prima." (See page 177.)

Van Buren Co., G. B., 522 Fifth Ave., New York, N. Y. "B. & L." (See page 739.)

Victory—See Perkins Appliance Co.

Walker & Co., W. T., 11 Pemberton Sq., Boston, Mass.

PRIMERS, Engine, for Fords

(See also Heaters, Mixture; also Mixers, Fuel; also Starters)

B. & L.—See Van Buren Co.

Bay State Pump Co.—See Shultis Automotive Corp.

Copley—See Shultis Automotive Corp.

Gould Mfg. Co., Seneca Falls, N. Y.

Henes Sales Corp., 462 Deming Pl., Chicago, Ill.

Home Light Co., 3353 Milwaukee Ave., Chicago, Ill.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

J. & B. Mfg. Co., Pittsfield, Mass. (See page 739.)

Jorgensen Mfg. Co., Waupaca, Wis. (See page 737.)

King, W. C., 911 Sargent St., Litchfield, Ill.

Maltby Auto Specialty Co., 303 W. Main St., Battle Creek, Mich.

Master Primer Co., 34 E. Larned St., Detroit, Mich. (See page 739.)

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)

Peru Brass & Mfg. Co., Peru, Ind.

Shultis Automotive Corp., 16-22 W. 61st St., New York, N. Y. (Sole Distributors for Bay State Pump Co., So. Boston, Mass. "Copley.") (See page 609.)

Smith, Fred, 56 W. Park Pl., Stamford, Conn.

Sure Start Primer Co., 18 W. 34th St., New York, N. Y.

T-R—See Tolman-Reeve Engineering Corp.

Tolman-Reeve Engineering Corp., 3104 Michigan Ave., Chicago, Ill. "T-R."

Turner Brass Works, Sycamore, Ill. (See page 177.)

Van Buren Co., G. B., 522 Fifth Ave., New York, N. Y. "B. & L." (See page 739.)

Zimmerman Mfg. Co., 247-51 W. Lincoln Way, Valparaiso, Ind.

PRIMING CUPS—See Cups, Spring Key Priming

PRIMING FLUIDS—See Fluids, Priming

PRIMING PLUGS FOR FORDS—See Plugs, Special

PRINTING MACHINES, BLUE—See Machines, Blue Printing

PROPELLER BLADE SHAPERS, AIRCRAFT—See Machines, Aircraft Propeller Blade Shaping

PROPELLER HUB BOLTS, AIRCRAFT——See Bolts, Aircraft Propeller Hub

PROPELLER HUB BORERS—See Machines, Aircraft Propeller Hub Boring

PROPELLER HUB BORING MACHINES—See Machines, Aircraft Propeller Hub Boring

PROPELLER HUB FLANGES, AIRCRAFT—See Hubs, Aircraft Propeller

PROPELLER HUBS, AIRCRAFT—See Hubs, Aircraft Propeller

PROPELLER SHAFT STEADY BEARINGS—See Bearings, Drive Shaft Steady

PROPELLER SHAFTS—See Shafts, Propeller

PROPELLER TOOTHING MACHINES, AIRCRAFT—See Machines, Aircraft Propeller Toothing

PROPELLER TURNING LATHES, AIRCRAFT—See Lathes, Aircraft Propeller Turning

PROPELLER VISE STANDS—See Stands, Aircraft Propeller Vise

PROPELLER WHEELS, MOTOR BOAT—See Wheels, Motor Boat Propeller

PROPELLERS, Aircraft Wood

American Propeller & Mfg. Co., 233 E. Hamburg St., Baltimore, Md. "Paragon."

American Sash & Door Co., 16th St. & Bellefontaine Ave., Kansas City, Mo.

Astoria Veneer Mills & Dock Co., 347 Madison Ave., New York, N. Y.

Curtiss Aeroplane & Motor Corp., Garden City, N. Y.

Doyle, W. A., Rutherford & Marion Sts., Trenton, N. J.

Flottorp Mfg. Co., 4611 W. 12th St., Chicago, Ill.

Halvorsen—See U. S. Products Corp.

Hamilton Aero Mfg. Co., Milwaukee, Wis.

Hartzell, Geo. W., Piqua, O. "Liberty."

Jacuzzi Bros., 1450 San Pablo Ave., Berkeley, Cal.

Lang Propeller Co. of America, 505 Fifth Ave., New York, N. Y.

Liberty—See Hartzell, Geo. W.

Marble Chair Co., B. L., Bedford, O.

Ostergaard Aircraft Works, 3215 W. Lake St., Chicago, Ill.

Paragon—See American Propeller & Mfg. Co.

Peck & Co., Hardman, New York, N. Y.

Tenny & Co., Dudley Lee, 144 Water St., New York, N. Y.

U. S. Products Corp., 220 S. Michigan Ave., Chicago, Ill. "Halvorsen."

West Woodworking Co., 308-24 N. Ada St., Chicago, Ill. "Westmore."

Westmore—See West Woodworking Co.

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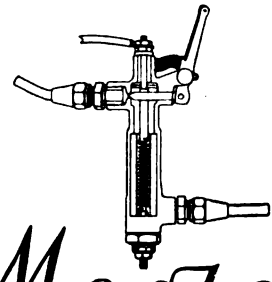
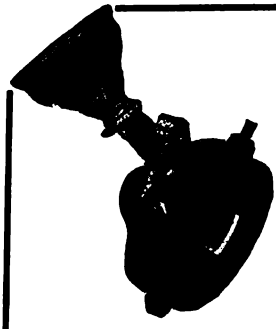
The Principle of the Electric Heater and the Master Electric Primer is the same—a heating coil supercharged. The Master Electric Primer guarantees starting within seven seconds on any car.



Master

ELECTRICAL PRIMER

MASTER PRIMER COMPANY
130 E. Larned St. Detroit, Mich.



J. & B. Original Timer for Ford Cars

This Timer has been found to wear longer—**and therefore to sell better**—because it is so designed that the oil reaches the vital spot which is the "Contact Roller."

Other Big J. & B. Sellers Include

Heavy Duty Timers, Right Hand Timers, Bushing Removers, Gasoline Injectors, Ford Switch Keys on Sell-Self Show Card, Replacement Coils for all cars, Valve Cage Remover for Valve-in-the-Head Engines.

Every item a money maker for the live dealer
Send for our proposition at once

J. & B. Manufacturing Co.
Pittsfield, Massachusetts

B. & L. Hot Gas Petrolizer Assembly

The units composing the Petrolizer are: Heating unit, fuel injector, electric switch, signal light, gas line T, 7 feet extra heavy copper fuel tube, 8 feet No. 14 double-covered wire and terminals.

Starts a Motor on One Turnover and Sells Almost as Fast

Wherever dealers have taken on the B. & L. Hot Gas Petrolizer it has proved the star seller among motoring accessories. Installed on a car, it not only nets the dealer a minimum profit of $4.87—and in many cases an additional profit for installing—but its absolutely unfailing operation is bound to please the customer.

B&L Hot Gas Petrolizer

is simplicity itself. It shoots a charge of superheated, dry gasoline vapor into the combustion chamber, independent of the carburetor; this charge explodes at the first turn of the motor. The consumption of heating current is negligible, lasting only a moment, but gasoline consumption is reduced and the storage battery is relieved from the usual ineffectual cold-weather starting efforts.

Retail price, $19.50. Sold with Money-Back Guarantee.

Sales Department

G. B. VAN BUREN CO.
Guaranty Trust Bldg., 522 Fifth Ave., New York
Mfd. by Bintliff-Laing Co., Plainfield, N. J.

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PROPELLERS, MOTOR BOAT — See Wheels, Motor Boat Propeller

PROPELLERS, SHAFT—See Mills, Dry Shaft Bearing End for Fords

PROPS OR SUPPORTS, CAR—See Jacks, Tire Saving

PROTECTORS, Airplane Rubber Fuselage Wire

Dural Rubber Corp., Maple Ave., Flemington, N. J.

PROTECTORS, Coil Box, for Fords

(Metal Shield to prevent rain or dampness reaching Coil Box or Terminal)

A. & E. Auto Top Co., 33-35 E. Cross St., Ypsilanti, Mich. (See page 325.)

Accurate Cover Co., 373 Canal St., New York, N. Y.

American Auto Products Co., 1319 L St., N. W., Washington, D. C. "Bone-Dry."

Bone-Dry—See American Auto Products Co.

Buob & Scheu, 500-10 Webster St., Cincinnati, O. (See page 325.)

Casco Mfg. Co., Thomasville, Ga. (Sole Distributors for Cooper Auto Supply Co., Thomasville, Ga.)

Champion Chemical Co., Linden Ave. & Monroe St., Springfield, O.

Clifton Mfg. Co., 323-27 Pleasant St., Waco, Texas.

Cooper Auto Supply Co.—See Casco Mfg. Co.

Crawford Mfg. Co., 211 N. Foushee St., Richmond, Va.

Doerner & Co., 4127 32d St., Cincinnati, O. "Paragon."

Economy Seat Co., 3132-36 S. Canal St., Chicago, Ill.

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 545.)

Esner Mfg. Co., 206 Green St., Peoria, Ill. "Soo-Al-Dry."

Hart-Bell Co., 1926 Broadway, New York, N. Y.

Hettrick Mfg. Co., Toledo, O.

Hodes-Zink Mfg. Co., 312 W. State St., Fremont, O. "Sure-Fit."

Highway Rubber Corp., 1009 Chestnut St., St. Louis, Mo.

Liberty Top & Tire Co., 123 E. Eighth St. Cincinnati, O.

Lockwood Mfg. Co., Kansas City, Mo. (See page 323.)

McKay-Grubb Rubber Co., 1110 Hennepin Ave., Minneapolis, Minn. "Russell."

Major Coil Protector Co., 370 Vinewood Ave., Detroit, Mich. (See page 497.)

Mil-Mac Mfg. Co., 16th St. & Glenwood Ave., Philadelphia, Pa. "Sentry."

Miller Mfg. Co., 905 Gates Ave., Brooklyn, N. Y.

Omaha Auto Top Co., 709-11 S. 15th St., Omaha, Neb.

Paragon—See Doerner & Co.

Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. (See page 317.)

Powers Mfg. Co., Waterloo, Ia. (See page 593.)

R. C. Fabric Co., 1383 Bedford Ave., Brooklyn, N. Y.

R-E—See Roose Mfg. Co.

Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E." (See pages 129, 151, 325 and 327.)

Russell's—See McKay-Grubb Rubber Co.

Safe-T-First Gasket Co., 316 W. 134th St., New York, N. Y.

Sentry—See Mil-Mac Mfg. Co.

Soo-Al-Dry—See Esner Mfg. Co.

Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo.

Sure-Fit—See Hodes-Zink Mfg. Co.

Tatco—See Thomas Auto Top Co.

Thomas Auto Top Co., 417 E. Jackson St., Muncie, Ind. "Tatco."

Trico Products Corp., 624-28 Ellicott St., Buffalo, N. Y.

Tyler Mfg. Co., 755 Boylston St., Boston, Mass. "Tymco."

Tymco—See Tyler Mfg. Co.

PROTECTORS, CUFF—See Protectors, Sleeve

PROTECTORS, Door

(Leather or fabric pads to protect the finish of the door)

B. E. Mfg. Co., 18 W. 18th St., New York, N. Y. "Bemco." (See page 321.)

Bemco—See B. E. Mfg. Co.

Buob & Scheu, 500-10 Webster St., Cincinnati, O. (See page 325.)

Campbell—See Perkins-Campbell Co.

Carroll Mfg. Co., 633 Mass. Ave., Arlington, Mass.

Central Auto Top & Leather Co., 419½ N. Capitol Ave., Indianapolis, Ind.

Crawford Mfg. Co., 211 N. Foushee St., Richmond, Va.

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 545.)

Fitzwell—See Niagara Fabric Mfg. Co.

Hopewell Bros., Watertown, Mass. (See page 629.)

Lockwood Mfg. Co., Kansas City, Mo. (See page 323.)

McKinnon Dash Co., Buffalo, N. Y. (See page 831.)

Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."

Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. "Campbell." (See page 317.)

R-E—See Roose Mfg. Co.

Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E." (See pages 129, 151, 325 and 327.)

Shugers Mfg. Co., 1002-04 S. Los Angeles St., Los Angeles, Cal. (See page 337.)

Stanwood Equipment Co., 308 N. Michigan Blvd., Chicago, Ill. (See page 91.)

Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo.

Thomas Auto Top Co., 417 E. Jackson St., Muncie, Ind.

PROTECTORS, EYE—See Goggles, Mechanics'

PROTECTORS, FENDER—See Covers, Fender

PROTECTORS, Sleeve and Cuff

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 321.)

B. E. Mfg. Co., 18 W. 18th St., New York, N. Y. "Bemco." (See page 321.)

Bemco—See B. E. Mfg. Co.

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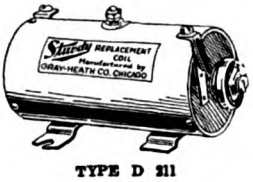
GHCo

GRAY-HEATH CO.

Sturdy REPLACEMENT COILS

TYPE R 214



TYPE D 211

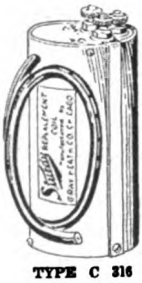
TYPE R 218

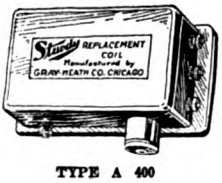
Sturdy Replacement Coils have no superior. They are designed to replace burned out coils used on all standard cars today. Every Coil is carefully tested before it leaves our plant and is guaranteed to give satisfaction.

We will replace, at any time, any Coil found to be defective in material or workmanship.

TYPE D 200

TYPE C 204


TYPE C 316



TYPE A 400

TYPE A 201

Manufactured by

GRAY-HEATH COMPANY

CHICAGO 1440 S. Michigan Ave. ILLINOIS

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PROTECTORS, Sleeve and Cuff (Continued)

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 545.)

Fitzwell—See Niagara Fabric Mfg. Co.

Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.

Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."

Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo.

PROTECTORS, Spark Plug Point

(Small metal shields or protectors to be attached to spark plug before it is placed in the cylinder to prevent the oil from fouling the points)

Ballard-Sutcliffe Co., 537 Turk St., San Francisco, Cal. "W. W."

W. W.—See Ballard-Sutcliffe Co.

PROTECTORS, TIMER WIRE GUARD—See Guards, Timer Wire for Fords

PROTECTORS, TIRE—See Treads, Detachable; also Shoes, Inner Tire

PUBLICATIONS—See Books and Periodicals

PULLERS, Axle Bearing Sleeve, for Fords

American—See Fairbanks Co.

C. & M.—See Sells & Co., O. P.

Cantrell-Miller Machine Works—See Sells & Co.

Dearborn Equipment Co., Kalamazoo, Mich. (See page 403.)

Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill. "American.") (See pages 137 to 140.)

Railway Specialty Co., Atchison, Kans. "Rysco."

Rysco—See Railway Specialty Co.

Sells & Co., O. P., 1834 Broadway, New York. (Sole Distributors for Cantrell-Miller Machine Works, San Francisco, Cal.) "C. & M."

Service Station Equipment Co.—See Fairbanks Co.

PULLERS, Axle Housing, for Fords

(Tool for separating propeller shaft housing from differential housing)

Handee—See Racine Handy Mfg. Co.

Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."

Universal Mfg. Co., Racine, Wis.

PULLERS, BATTERY CONNECTOR—See Tools, Storage Battery Repair

PULLERS, Bearing

Campbell Auto Works, 238-40 N. El Dorado St., Stockton, Cal. (See page 473.)

Durham Co., P. J., 244 W. 49th St., New York, N. Y. (See page 531.)

PULLERS, BUSHING, FOR FORDS — See Extractors, Bushing

PULLERS, CAR—See Winches and Blocks

PULLERS, Cotter Pin

American Cotter Pin Co., Park Bldg., Pittsburgh, Pa. "May's."

Auto Forge Sales Co., 80 King Ave., Columbus, O.

Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.

Brewer Tichener Corp., Cortland, N. Y. (See page 567.)

Buffum Tool Co., Louisiana, Mo. (See page 529.)

Carver Tool Works, Spring Valley, N. Y.

Chapin-Stephens Co., Pine Meadow, Conn. "Elmore."

Clinton Machine Works, 460 High St., Clinton, Mass.

Cushman Co., Champaign, Ill. (See page 635.)

E-Z—See Syracuse Wrench Co.

Elmore—See Chapin-Stephens Co.

Kraeuter & Co., Newark, N. J. (See page 711.)

Marcy Tool Works, Putnam, Conn.

May's—See American Cotter Pin Co.

Mayhew Steel Products, 291 Broadway, New York, N. Y.

Milwaukee Tool & Forge Co., 220 Becher St., Milwaukee, Wis.

Mossberg Co., Frank, Attleboro, Mass.

Mound Tool Co., Dept. D, Seventh & Hickory Sts., St. Louis, Mo. (See page 1109.)

S. & I. Co., 55-57 Governor St., Springfield, Mass.

Shepherd—See Zim Accessories.

Stortz & Son, John, Philadelphia, Pa.

Syracuse Twist Drill Co., 936 Grape St., Syracuse, N. Y.

Syracuse Wrench Co., Syracuse, N. Y. "E-Z."

Vichek Tool Co, Cleveland, O.

West Haven Mfg. Co., 22 Elm St. (W. Haven), New Haven, Conn.

PULLERS, Gear and Wheel

American—See Fairbanks Co.

Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.

Crane Puller Co., Arlington, Mass. (See page 743.)

Diebel, A. J., 976 Woodward Ave., Detroit, Mich. (Michigan, Indiana and Ohio Distributors for Cushman Pullers.) (See page 543.)

F & W—See Indianapolis Metal Products Co.

Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill. "American.") (See pages 137 to 140.)

Greb Co., 195 State St., Boston, Mass. (See page 743.)

Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributor for Greb Pullers.) (See page 1187.)

Indianapolis Metal Products Co., 2022 W. South St., Indianapolis, Ind. "F & W"

Kerschbaum, M. E., New York, N. Y.

Little Giant—See Premier Electric Co.

Polson Mfg. Co., 1750 Main St., Buffalo, N. Y.

Premier Electric Co., 3800-10 Ravenswood Ave., Chicago, Ill. "Little Giant."

Service Station Equipment Co.—See Fairbanks Co.

Sheperd—See Zim Accessories.

Stenberg Mfg. Co., John E., 3238 Craft St., Chicago, Ill.

Zim Accessories, 208 N. Wabash Ave., Chicago, Ill. "Sheperd."

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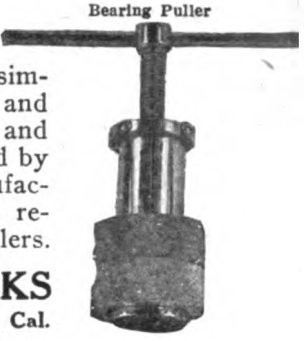
Plain Extractor

CAMPBELL

Bearing Pullers and Race Extractors simplify the removal of bearing cones and races on Megneto Armature Shafts and other electrical equipment. Endorsed by best mechanics and Magneto Manufacturers. Description and prices on request. Discount to Jobbers and Dealers.

Bearing Puller



CAMPBELL AUTO WORKS

238-240 N. El Dorado St., Stockton, Cal.

CRANE PULLER

For

Removing auto wheels, cams, collars, gears, propellers, commutators, fly-wheels, pulleys, sprockets, ball-bearings and annular bearings—

Garage men and service men use the improved Crane Puller.

There isn't a tool made that will do the work as quickly and with so little exertion.

Write today for discounts and catalog

CRANE PULLER CO.

Arlington, Mass.

When You Think of Puller—Say

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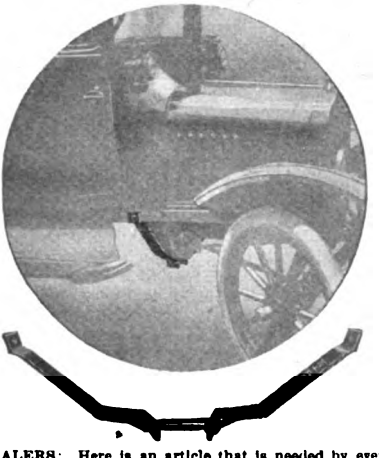
A FORD NECESSITY



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JOBBERS: The SIMPSON CRANKCASE SUPPORT is such a quick seller and in such constant demand by Ford owners that it is popular with dealers everywhere.

Prices and terms to the trade on request.

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GREB AUTOMATIC GRIP PULLER

BEACH PATENT

Most powerful and efficient wheel, gear and bearing pullers. Write for description and 10-day trial proposition. Any jobber will supply you.

OTHER GREB PRODUCTS

Greb Automatic Grip Extractors — Greb Rear Axle Press — Greb Rim Tool — Greblox Solder Cement — Greb Garage Presses — Greb Tire Remover — Greb Windshield Gloss — Grebford Extension Unit — Greb Process Bushing Press

The Greb Company, Inc. 195 State Street, Boston, Mass.

MANUFACTURERS OF AUTOMOTIVE AND GARAGE EQUIPMENT

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PULLERS, Gear, for Fords

(For removing timing gears and generator pinions.)

Hinckley-Myers Co., Jackson, Mich.

PULLERS, HOUSING FOR FORDS—See Pullers, Rear Axle Housing

PULLERS, REAR AXLE SLEEVE FOR FORDS—See Pullers, Axle Sleeve Bearing

PULLERS, SLEEVE BEARING FOR FORDS—See Pullers, Axle Bearing Pullers

PULLERS, WHEEL—See Pullers, Gear

PULLERS, Wheel, for Fords

(For removing rear wheels.)

Am-Pe-Co Sales Co., Marshalltown, Iowa. (See page 437.)

Baltimore Hub-Wheel & Mfg. Co., 221 Gay St., Baltimore, Md. "Hubco."

Benford Auto Products, Mt. Vernon, N. Y.

Buckeye—See Central Brass & Fixture Co.

C. & M.—See Sells & Co., O. P.

Cantrell-Miller Machine Works—See Sells & Co

Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."

Cooper Mfg. Co.—See Fulton Co.

Dearborn Equipment Co., N. Pitcher St., Kalamazoo, Mich.

E. G.—See Grossman Mfg. Corp.

Easy-Off—See Honn, Peter.

Edelman & Co., E., 2638 N. Crawford Ave., Chicago, Ill.

Efemco—See Foster, Merriam & Co.

Foster, Merriam & Co., Meriden, Conn. "Efemco." (See page 821.)

Fulton Co., Dept. S., 75th & National Ave., Milwaukee, Wis. (Sole Distributors for Cooper Mfg. Co., Marshalltown, Iowa.) (See page 1036.)

Honn, Peter, 629 Fairview Ave., Grand Rapids, Mich. "Easy-Off."

Hubco—See Baltimore Hub-Wheel & Mfg. Co.

Humboldt—See Republic Auto Parts Co.

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

Mosco—See Motor Specialties Co.

Mossberg Co., Frank, Attleboro, Mass.

Motor Specialties Co., Waltham, Mass. "Mosco."

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)

Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Humboldt."

Sells & Co., O. P., 1834 Broadway, New York, N. Y. (Sole Distributors for Cantrell-Miller Machine Works, San Francisco, Cal.) "C. & M."

Whitehouse Mfg. Co., 42 Elm St., Newark, N. J. (See page 637.)

PULLEY COVERS, CORK—See Covers, Cork Pulley Rim

PULLEYS, CLUTCH—See Pulleys, Tractor Friction Clutch

PULLEYS, FAN—See Pulleys, Pressed Steel Fan

PULLEYS, FRICTION CLUTCH—See Pulleys, Tractor Friction Clutch

PULLEYS, Pressed Steel, Fan

(See also Fans, Radiator)

Michigan Engine Valve Co., 115-17 Columbia St., W., Detroit, Mich. (See page 1095.)

PULLEYS, Tractor Friction Clutch

Brown Clutch Co., 1737 S. Camp St., Sandusky, O.

Havana Mfg. Co., Havana, Ill.

Herken, Jr.—See Minster Machine Co.

Hinderer Bros. Co., 20th St. & Wheeling R. R., N. E., Canton, O.

Lasure Friction Clutch Co., Fifth & Market Sts., Watertown, Wis.

Minster Machine Co., Minster, O. "Herken, Jr."

O. K. Clutch & Machinery Co., Columbia, Pa.

Twin Disc Clutch Co., Racine, Wis. (See page 925.)

PULLEYS AND SHEAVES—See Sheaves and Pulleys

PUMP CONNECTION WASHERS—See Washers, Tire Pump Connection

PUMP CONNECTIONS—See Connections, Tire Pump

PUMP COUPLINGS—See Couplings, Magneto and Generator

PUMP SHAFTS—See Shafts, Transmission

PUMP SYSTEMS—See Systems, Magnetic Pump Gasoline

PUMP WASHERS—See Washers, Leather

PUMPS, AIR—See Pumps, Engine Driven; also Pumps, Foot; also Compressors, Garage; for Steam Air Pumps—See Pumps, Steam Air

PUMPS, Airplane Fuel

Buffalo Pressed Steel Co., Buffalo, N. Y. (See page 655.)

Halvorsen—See U. S. Products Corp.

H. & N. Carburetor Co., 138 West Ave., Long Island City, N. Y.

Kellogg Mfg. Co., Rochester, N. Y. (See page 747.)

Lipman Pump Works, 100 Shirland Ave., Beloit, Wis.

PUMPS, Aircraft Water Circulating

Aeromarine Plane & Motor Corp., Keyport, N. J.

Atlas Brass Foundry Co., Columbus, O. (See page 595.)

Atlas Mfg. Co., 980 S. Park St., Columbus O.

Lobee Pump & Machinery Co., 111-19 Dearborn St., Buffalo, N. Y.

Milwaukee Circulating Pump Co., 387-89 Tenth St., Milwaukee, Wis. (See page 749.)

Pneumatic Appliance Co., Williamson Bldg., Cleveland, O.

U. S. Products Corp., 220 S. Michigan Ave., Chicago, Ill. "Halvorsen."

Westco—See Western Pump Co.

Western Pump Co., Front & Gaines Sts., Davenport, Ia. "Westco."

PUMPS, Barrel Emptying

(For emptying oil or gasoline barrels or transfering contents to tanks by air pressure)

Morgan Co., L. A., 9 Pearl St., Brookline, Mass. "Optimo."

Optimo—See Morgan Co.

Pneumatic Appliance Co., Williamson Bldg., Cleveland, O.

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The World's Best Pump

The J. K. Lever Pump

RELIABLE
POWERFUL
EASY TO OPERATE
DURABLE
COMPACT
ALL STEEL
NEAT

List Price **$5.50**

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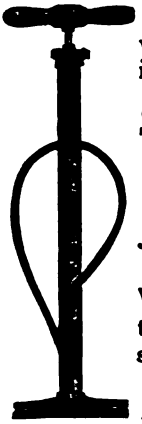
1400%

INCREASED SALES THIS YEAR



1¼" steel tube. Blue enamel. No. 11 Try-It $2.75

It's the quality we are building in the pump

Six Models
one for every need.

Jobbers and Dealers
We have an interesting proposition.

AUTOQUIP Mfg. Co., Inc.
Rochester, N. Y.

1½" Brass tube, nickel plated. A remarkable selling pump. Price, $4.00

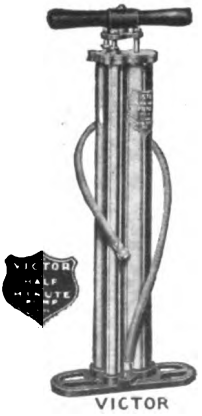
Single

Steel Blue Enamel
25 Case, 120 Lbs.

Triple

Steel
Brass Plated
25 Case, 130 Lbs.

Triple



Brass
25 Case, 175 Lbs.

Single

Steel or Brass
50 Case, 155 Lbs.

Double

Brass or Steel
25 Case, 110 Lbs.

OTHER STYLES ALSO

JUDD & LELAND MFG. CO. Clifton Springs, N. Y.

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PUMPS, BILGE—See Pumps, Motor Boat Engine Driven Bilge

PUMPS, BOILER FEED—See Pumps, Steam Boiler Feed

PUMPS, CIRCULATING—See Pumps, Water Circulating; also Pumps, Aircraft Water Circulating; also Pumps, Motor Boat

PUMPS, Engine Driven Tire

Advance Machinery Co., Van Wert, O.

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for Detroit Pumps.) (See page 275.)

Bay State Pump Co., 500 E. First St. (S. Boston), Boston, Mass. "Crane."

Brown Co., 1071-73 Clinton St., Syracuse, N. Y.

Cassco—See Cassidy Co.

Cassidy Co., Inc., Edward A., 23 W. 43d St., New York, N. Y. (Sales Department for West Side Foundry Co., Troy, N. Y.) "Cassco." (See page 87.)

Crane—See Bay State Pump Co.

Detroit Accessories Corp., Detroit Mich. (See page 747.)

General Utility Co., 1326-30 Ogden St., Philadelphia, Pa.

Hauser Machine & Mfg. Co., 232 Mill St., Rochester, N. Y.

Hill Pump Valve Co.—See Zinke Co.

Hilton—See Raymond Engineering Corp.

Judd & Leland Mfg. Co., Clifton Springs, N. Y. "Juleco." (See page 745.)

Juleco—See Judd & Leland Mfg. Co.

K S Supply Co., 343 S. Dearborn St., Chicago, Ill.

Keene Mfg. Co., Keene, N. H.

Kellogg Mfg. Co., Rochester, N. Y. (See page 747.)

Lipman Pump Works, 100 Shirland Ave., Beloit, Wis.

Longstroke—See Motor Starter & Air Pump Co.

Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill.

Motor Starter & Air Pump Co., 52-60 Dickerson St., Newark, N. J. "Longstroke." (See page 289.)

Ogden Mfg. Co., Plymouth, Ind.

Pneumatic Appliance Co., Williamson Bldg., Cleveland, O.

R-F—See Rauber-Fien Mfg. Co.

Raymond Engineering Corp., 307 Lafayette St., New York, N. Y. "Hilton."

Risk's Travel Tire Pump Co., Plymouth Bldg., Minneapolis, Minn.

Roll-On—See V Air Valve & Mfg. Co.

S-H Pump Co., 2440 W. 34th Pl., Chicago, Ill.

Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 177.)

Sundstrom Mfg. Co., Shields Ave. at 32d St., Chicago, Ill. "Wizard." (See page 751.)

Utility—See Zinke Co.

V Air Valve & Mfg. Co., 1648 Tremont St., Denver, Colo. "Roll-On."

West Side Foundry Co.—See Cassidy Co.

Wissler Instrument Works, A., 601 N. Broadway, St. Louis, Mo.

Wizard—See Sundstrom Mfg. Co.

York Electric & Machine Co., 30-34 N. Penn St., York, Pa.

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Hill Pump Valve Co., Chicago, Ill. "Utility.") (See page 309.)

PUMPS, Engine Driven Tire, for Fords

Advance Machinery Co., Van Wert, O.

Cassco—See Cassidy Co.

Cassidy Co., Inc., Edward A., 23 W. 43d St., New York, N. Y. (Sales Department for West Side Foundry Co., Troy, N. Y.) "Cassco." (See page 87.)

Danvers Specialty Co., Danvers, Ill.

Hill Pump Valve Co.—See Zinke Co.

Judd & Leland Mfg. Co., Clifton Springs, N. Y. "Juleco." (See page 745.)

Juleco—See Judd & Leland Mfg. Co.

Kellogg Mfg. Co., Rochester, N. Y. (See page 747.)

Marvel Accessories Mfg. Co., 1220 W. Sixth St., Cleveland, O.

Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill.

Utility Junior—See Zinke Co.

West Side Foundry Co.—See Cassidy Co.

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Hill Pump Valve Co., Chicago, Ill. "Utility Junior.") (See page 309.)

PUMPS, Foot Tire

Auto Pedal Pump Co.—See Cassidy Co.

Cassidy Co., Edward A., 280 Madison Ave., New York, N. Y. (Sales Department for Auto Pedal Pump Co., New York, N. Y. "Twombly."

Liberty—See Apex Electric Mfg. Co.

Pratt Mfg. Co., Wm. E., 35 W. Lake St., Chicago, Ill.

Service Mfg. Co., 211-13 Center St., New York, N. Y.

Twombly—See Cassidy Co.

PUMPS, FUEL—See Pumps, Airplane Fuel

PUMPS, GARAGE GASOLINE—See Tanks, Gasoline Storage

PUMPS, GASOLINE FEED—See Systems, Magnetic Pump

PUMPS, GREASE—See Guns, Portable Garage Grease

PUMPS, Hand Tire

Ace—See Bridgeport Brass Co.

Aeolus—See Bridgeport Brass Co.

Albert Lea Sprayer Co., Albert Lea, Minn. "Utility." (See page 753.)

Alert Sales Corp., Carter Bldg., Rochester, N. Y. (Sole Distributors for Arthur G. Norton, Rochester, N. Y.)

American Device Mfg. Co., 4523 Shaw Ave., St. Louis, Mo. "Duo."

Anthony Co., 138 West Ave., Long Island City, N. Y. (See page 747.)

Apex Electric Mfg. Co., 1410 W 59th St., Chicago, Ill. "Yankee." "Liberty."

Atlas—See Bridgeport Brass Co.

Autoquip Mfg. Co., Rochester, N. Y. "Twin," "Triumph," "Paramount," "Try It," "Triple Special," "Royal Triple." (See page 745.)

Baldwin—See Coe-Stapley Mfg. Corp.

Bell Pump & Mfg. Co., 534 E. Fort St., Detroit, Mich.

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KELLOGG TIRE PUMPS

POWER TIRE PUMPS
for Automobiles and Trucks

HAND PUMPS

GARAGE COMPRESSORS

GREASE GUNS

KELLOGG MANUFACTURING CO.
ROCHESTER, N. Y., U. S. A.

THE
ANTHONY

450,000 users of ANTHONY Pumps are satisfied. This is the verdict of men who paid for quality and expected service.

400,000 of these previously tried other makes of pumps. They first used cheap junk, double acting stuff, or two or three cylinder varieties.

Then they bought the best pump on the market. The original quality pump. A guaranteed genuine ANTHONY with all metal valve.

Now they are satisfied.

Retail
Any Size $4.50

THE ANTHONY COMPANY
138 West Avenue
Long Island City, N. Y.

Gearless DETROIT Crank-Shaft
TIRE-PUMP
Patented Aug. 24, 1915
Carried in Tool-Kit. Attached like Hand-Crank

TIRE PUMPS AND ACCESSORIES

This Company is one of the largest builders of all styles of power-driven tire pumps in the country—including transmission pumps for many of the best known high-powered touring cars and trucks.

We also make the Detroit Crankshaft Tire Pump, selling through dealers to car owners.

Samples for Standard Equipment. Blue Prints and Quotations supplied on request.

DETROIT ACCESSORIES CORPORATION, DETROIT, MICH.

Factory Sales Branches

New York
Asch & Company, 16-24 West 61st Street

Chicago
Miller-Cave Corporation,
1220 So. Michigan Ave.

Atlanta
Wright & Company, Inc.

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PUMPS, Hand Tire (Continued)

Berch & Joder, 211 Kerr St., Hastings, Neb. "Golden Rod."

Big Bear—See Foster, Merriam & Co.

Blickman, S., New York, N. Y. "Green Aero." (See page 751.)

Blizzard—See Bridgeport Brass Co.

Blue Champion—See Robert-Irwin Mfg. Co.

Blue Deer—See Melray Mfg. Co.

Blue Devil—See Judd & Leland Mfg. Co.

Boss—See Cox Brass Mfg. Co.

Bridgeport Brass Co., Bridgeport, Conn. "Stapley," "Æolus," "Atlas," "Crown," "Windjammer," "Weeno," "Ace." (See page 907.)

C. & S.—See Codman & Shurtleff.

Carver—See Newton Mfg. Co.

Casey-Hudson Co., 341 E. Ohio St., Chicago, Ill.

Champion, Jr.—See Robert-Irwin Mfg. Co.

Cleveland Faucet Co., 703 Frankfort Ave., N. W., Cleveland, O.

Codman & Shurtleff, 120 Boylston St., Boston, Mass. "C. & S."

Coe-Stapley Mfg. Corp., West Haven, Conn. "Rex," "Little Giant," "Baldwin," "Whirlwind," "Longfellow," "Gem," "Okeh." (See page 539.)

Cox Brass Mfg. Co., Albany, N. Y. "Boss," "Handy," "Reliable." (See page 261.)

Crescent Mfg. Co., 129 Reade St., New York, N. Y. (See page 1207.)

Crown—See Bridgeport Brass Co.

Cyclone—See Judd & Leland Mfg. Co.

Dead Easy—See Globe Mfg. Co.

Duo—See American Device Mfg. Co.

Durabilt—See Winsted Hardware Mfg. Co.

E-M-G—See Gant Mfg. Co.

Eureka—See Judd & Leland Mfg. Co.

Excel—See Judd & Leland Mfg. Co.

E-Z-Quick—See Mayo-Skinner Mfg. Co.

Factory Sales Co., 120 Broadway, New York, N. Y. "Hilton."

Fapco—See Force Air Pump Co.

Force Air Pump Co., 203 S. Oak St., Jefferson, Ia. "Fapco."

Foster, Merriam & Co., Meriden, Conn. "Big Bear." (See page 821.)

Freeman Brass Works, 92 Bowery, New York, N. Y.

Fulton Co., 75th & National Aves., Milwaukee, Wis. (Sole Distributors for Monroe Automotive Equipment Mfg. Co., Monroe, Mich.) (See page 1035.)

Gant Mfg. Co., E. M., Ethridge, Tenn. "E-M-G."

Gem—See Coe-Stapley Mfg. Co.

Generator Valve Co., 47 Dinsmore Pl., Brooklyn, N. Y. "James."

Geneva—See Howell Co.

Gleason-Peters Air Pump Co., 384 Classon Ave., Brooklyn, N. Y.

Globe Mfg. Co., 64 Grant St., Battle Creek, Mich. "Dead Easy."

Golden Rod—See Berch & Joder.

Green Aero—See Blickman, S.

Hancock Mfg. Co., 802 E. Henry St., Charlotte, Mich.

Handy—See Cox Brass Mfg. Co.

Harlem—See Judd & Leland Mfg. Co.

Hart-Bell Co., 1926 Broadway, New York, N. Y.

Hilton—See Factory Sales Co.

Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributor for Anthony Pumps.) (See page 1187.)

Howell Co., W. H., Geneva, Ill. "Jensen," "Geneva." (See page 749.)

Ideal—See Noera Mfg. Co.

I. X. L.—See Inland Pump Mfg. Co.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. "Wixon." (See page 177.)

Inland Pump Mfg. Co., 610-12 Reaper Blk., Chicago, Ill. "I. X. L." (See page 883.)

J-K—See Jensen-Kohlert Mfg. Co.

James—See Generator Valve Co.

Jensen—See Howell Co.

Jensen-Kohlert Mfg. Co., St. Charles, Ill. "J-K." (See page 745.)

Judd & Leland Mfg. Co., Clifton Springs, N. Y. "Eureka," "Tornado," "Cyclone," "Victor," "Excel," "Harlem," "Little Taylor." (See page 745.)

Kellogg Mfg. Co., Rochester, N. Y. (See page 747.)

Liberty—See Apex Electric Mfg. Co.

Little Giant—See Coe-Stapley Mfg. Co.

Little Taylor—See Judd & Leland Mfg. Co.

Longfellow—See Coe-Stapley Mfg. Corp.

Marvel—See St. Charles Specialty Mfg. Co.

Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill. "E-Z-Quick."

Melray Mfg. Co., 722 N. Vandeventer Ave., St. Louis, Mo. "Blue Deer."

Metro Automotive Co., Thoroughfare Bldg., New York, N. Y. (Sole Distributors for Ruggles-Klingemann Mfg. Co., Salem, Mass.)

Monroe Automotive Equipment Co.—See Fulton Co.

Moon Bros. Mfg. Co., 4900 McKissock Ave., St. Louis, Mo.

Morgan Mfg. Co., Court St., Keene, N. H. (See page 751.)

Myers Auto Pump Co., 61 Washington St., Paterson, N. J.

National Service Mfg. Co.—See Pivot Sales Corp.

Newton Mfg. Co., Church St., Plainville, Conn. "Carver."

No. 99—See Stevens & Co.

Noera Mfg. Co., 21-97 Griggs St., Waterbury, Conn. "Red Devil." "Ideal." "Waterbury."

Norton, Arthur G.—See Alert Sales Corp.

Okeh—See Coe-Stapley Mfg. Corp.

Paramount—See Autoquip Mfg. Co.

Pivot Sales Corp., 608 Chestnut St., Philadelphia, Pa. (Sole Distributors for National Service Mfg. Co., Philadelphia, Pa.)

Pneumatic Appliance Co., Williamson Bldg., Cleveland, O.

Red Devil—See Noera Mfg. Co.

Red Wonder—See Sidel-Rattner Mfg. Co.

Reliable—See Cox Brass Mfg. Co.

Rex—See Coe-Stapley Mfg. Co.

Robert-Irwin Mfg. Co., 427-31 W. Broadway, New York, N. Y. "Blue Champion," "Champion, Jr." (See page 939.)

Rose Mfg. Co., Frank, Hastings, Neb. (See page 751.)

Royal-Triple—See Autoquip Mfg. Co.

Ruggles-Klingemann Mfg. Co.—See Metro Automotive Co.

Shawver Co., rear 21 W. Pleasant St., Springfield, O. "Springfield."

Sidel-Rattner Mfg. Co., Bush Terminal, Brooklyn, N. Y. "Red Wonder." (See page 749.)

Springfield—See Shawver Co.

Stapley—See Bridgeport Brass Co.

Stevens, C. S., 680 W. Main St., New Britain, Conn.

Stevens & Co., 375 Broadway, New York, N. Y. "No. 99." (See page 1147.)

Tornado—See Judd & Leland Mfg. Co.

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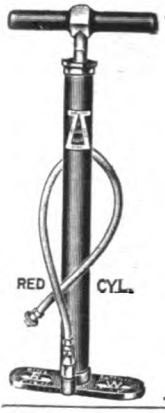


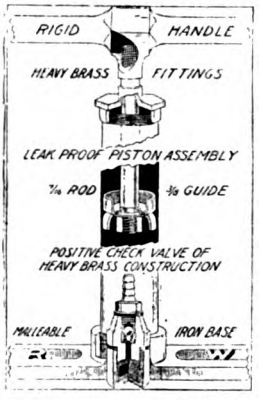
THE GENUINE ORIGINAL

RED WONDER

A most remarkable single cylinder pump. Distinctive and individual in appearance.

Built by

SIDEL-RATTNER MFG. COMPANY, Inc.
BUSH TERMINAL BROOKLYN, N. Y.



The Story A Gauge Tells

It does not take 175 to 200 lbs. pressure to fill a tire, but the question is, will your pump do it and besides, without physical torture?

Probably never tried a severe test of this nature, but the point is this—it can be done and is done many, many times a day by owners of the Jensen Lever Pump.

One-half the strokes and one-quarter the effort sounds good on these hot days.

A trial will convince you and we can ship at once.

THE W. H. HOWELL CO.

Geneva, Illinois

Milwaukee Circulating Pump Co.

We are specialists in the manufacture of oil and water pumps. Send us your blue prints for quotations. Our prices will interest you. *Let us be your pump department.*

387-389 Tenth Street Milwaukee, Wis.

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PUMPS, Hand Tire (Continued)

Triple Special—See Autoquip Mfg. Co.
Triumph—See Autoquip Mfg. Co.
Try-It—See Autoquip Mfg. Co.
Turner Brass Works, Sycamore, Ill. (See page 177.)
Twin—See Autoquip Mfg. Co.
Utility—See Albert Lea Sprayer Co.
Victor—See Judd & Leland Mfg. Co.
Waterbury—See Noera Mfg. Co.
Wayne Engineering Co., Honesdale, Pa.
Weeno—See Bridgeport Brass Co.
Whirlwind—See Coe-Stapley Mfg. Corp.
Windjammer—See Bridgeport Brass Co.
Winsted Hardware Mfg. Co., Winsted, Conn. "Durabilt."
Wixon—See Imperial Brass Mfg. Co.
Yankee—See Apex Electric Mfg. Co.

PUMPS, Motor Boat Engine Driven Bilge

(See also Boilers, Automatic Bilge)

Bevin Bros. Mfg. Co., East Hampton, Conn.
Generator Valve Co., 47 Dinsmore Pl., Brooklyn, N. Y. "James."
Halvorsen—See U. S. Products Corp.
James—See Generator Valve Co.
Lobee Pump & Machinery Co., 119 Dearborn St., Buffalo, N. Y.
Monarch Valve Co., 112 Front St., Brooklyn, N. Y.
Pneumatic Appliance Co., Williamson Bldg., Cleveland, O.
U. S. Products Corp., 220 S. Michigan Ave., Chicago, Ill. "Halvorsen."
Wilcox-Crittenden & Co., 2 S. Main St., Middletown, Conn.

PUMPS, Motor Boat Water Circulating

Atlas Brass Foundry Co., Columbus, O. (See page 595.)
Fulfo Pump Co., 126 Opera Pl., Blanchester, O.
Halvorsen—See U. S. Products Corp.
Lipman Pump Works, 100 Shirland Ave., Beloit, Wis.
Lobee Pump & Machinery Co., 111-19 Dearborn St., Buffalo, N. Y.
Milwaukee Circulating Pump Co., 387-89 Tenth St., Milwaukee, Wis. (See page 749.)
Oberdorfer Brass Co., M. L., 804 E. Water St., Syracuse, N. Y.
U. S. Products Corp., 220 S. Michigan Ave., Chicago, Ill. "Halvorsen."
Westco—See Western Pump Co.
Western Pump Co., Front & Gaines Sts., Davenport, Ia. "Westco."

PUMPS, Motorcycle Tire

Anthony Co., 138 West Ave., Long Island City, N. Y. (See page 747.)
Bridgeport Brass Co., Bridgeport, Conn. (See page 907.)

PUMPS, OIL—See Lubricators

PUMPS, OIL FILLER—See Tanks and Systems, Oil

PUMPS, POWER TIRE—See Pumps, Engine Driven; also Pumps, Garage

PUMPS, Steam Air

(For keeping air pressure on fuel tanks of steam cars)

Cameron Steam Pump Works, A. S., 11 Broadway, New York, N. Y.
Union Steam Pump Co., Jefferson & Madison Sts., Battle Creek, Mich.

PUMPS, Steam Boiler Feed

(For feeding boilers of steam cars)

American Steam Pump Co., Maple St., Battle Creek, Mich. "Marsh."
Cameron Steam Pump Works, A. S., 11 Broadway, New York, N. Y.
Marsh—See American Steam Pump Co.
Union Steam Pump Co., Jefferson & Madison Sts., Battle Creek, Mich.

PUMPS, TIRE—See Pumps, Engine Driven; also Pumps, Foot; also Pumps, Hand; also Pumps, Motorcycle Tire; also Compressors, Garage

PUMPS, Tractor Water Circulating

Atlas Brass Foundry Co., Columbus, O. (See page 595.)
Fulfo Pump Co., 126 Opera Pl., Blanchester, O.
Halvorsen—See U. S. Products Corp.
Lobee Pump & Machinery Co., 119 Dearborn St., Buffalo, N. Y.
Michigan Machine Co., 951 Porter St., Detroit, Mich. "Rollway."
Milwaukee Circulating Pump Co., 387-89 Tenth St., Milwaukee, Wis. (See page 749.)
Oberdorfer Brass Co., M. L., 804 E. Water St., Syracuse, N. Y.
Peru Brass & Mfg. Co., Peru, Ind.
Pneumatic Appliance Co., Williamson Bldg., Cleveland, O.
Rollway—See Michigan Machine Co.
U. S. Products Corp., 220 S. Michigan Ave., Chicago, Ill "Halvorsen."

PUMPS, Water Circulating

Atlas Brass Foundry Co., Columbus, O. (See page 595.)
Blackmer Rotary Pump Co., Sheridan Ave. & G. R. & I. Railway, Petoskey, Mich.
Cluley Auto Supplies Co., 471 E. Ohio St., Chicago, Ill. "Gusher."
Doehler Die-Casting Co., Brooklyn, N. Y. (See page 213.)
Fulfo Pump Co., 126 Opera Pl., Blanchester, O.
Gusher—See Cluley Auto Supplies Co.
Halvorsen—See U. S. Products Corp.
Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)
Lipman Pump Works, 100 Shirland Ave., Beloit, Wis.
Lobee Pump & Machinery Co., 111-19 Dearborn St., Buffalo, N. Y.
Milwaukee Circulating Pump Co., 387-89 Tenth St., Milwaukee, Wis. (See page 749.)
Motor Cooling System Co., Charles & Lombard Sts., Baltimore, Md.
Oberdorfer Brass Co., M. L., 804 E. Water St., Syracuse, N. Y.
Pneumatic Appliance Co., Williamson Bldg., Cleveland, O.
U. S. Products Corp., 220 S. Michigan Ave., Chicago, Ill "Halvorsen."
Westco—See Western Pump Co.
Western Pump Co., Front & Gaines Sts., Davenport, Ia. "Westco."

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WIZARD
VALVELESS

Power-Driven Tire Pumps

Simplicity

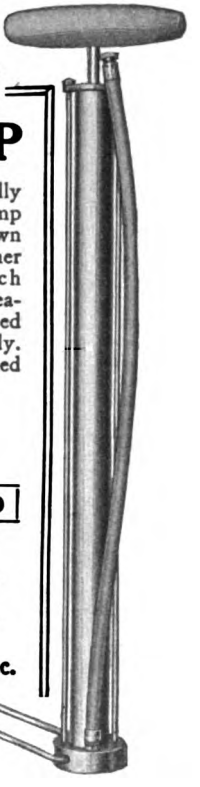
Of Wizard design, eliminates all troublesome features of the valve type pumps with their multiplicity of parts and their necessary adjustments and repairs.

There are only three moving parts in the Wizard Pump and for its service-life no adjustments, renewals or repairs are necessary. A turn of the grease cup before starting is the only attention needed.

Immediate deliveries of all models. Literature sent upon request.

Sundstrom Manufacturing Co.
Successors to Rex Machine Co.
Shields Ave. at 32nd St., Chicago, Ill.
Detroit Office, Garfield Building

The MORGAN *RED* PUMP



Will inflate tires in practically half the time an ordinary pump requires. Barrel of cold drawn steel—easily renewable leather on piston—5-ply Goodrich hose. Exclusive foot strap feature allows pump to be used either at angle or vertically. Finished in red enamel. Packed in lots of 25.

22 inch **$4.50**

18 - Inch $4.00

Other Products
Valve Lifters Hose Clamps
Piston Ring Compressors
Ball Joints Spark Plugs

MORGAN MFG. CO., Inc.
Court Street KEENE, N. H.

"To please your trade sell Morgan-made"

THE
GREEN AERO PUMP

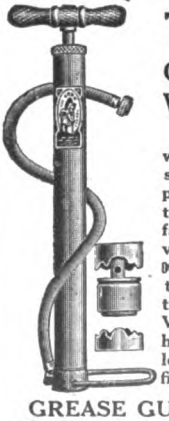
Quality Materials
Correct Construction

Dealers
Your success in retailing tire pumps depends on the line you select.
The GREEN AERO Tire Pump is the utmost in quality.
Back of that strong, sturdy construction is the painstaking effort of skilled labor that builds the GREEN AERO Tire Pump—from materials of only the highest quality. Finished with an appearance unsurpassed in pump manufacture.

The Price Is Right
Your Profit Is Liberal

S. BLICKMAN
New York

ROSE



TIRE PUMP

Quick, Easy Sales With Good Profits

The Rose Tire Pump will give you quick, easy sales with good, steady profits. It's the one pump that gives lasting satisfaction—that's its best advertisement. Over 2,500,000 Rose Pumps have made tire pumping *easy* for their owners. The Patent Valve of the Rose Pump has made it the one big leader in the tire pump field.

GREASE GUNS AND BUCKETS

The Rose Taper Nozzle Grease Gun is the cleanest, handiest, most efficient and most economical gun on the market. The Rose Fil-A-Gun Grease Bucket pumps grease direct from the bucket to the point where it is needed. Like the Rose Pump, both sell easily and will make you good profits.

Get Rose Products from Your Jobber.
Write to him for catalogue and prices.
FRANK ROSE MFG. CO., Hastings, Nebr.

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PUMPS, Water Circulating, for Fords

(Auxiliary water circulators)

Atlas Brass Foundry Co., Columbus, O. (See page 595.)

Atlas Ford Pump Co., 224 Fourth St., Los Angeles, Cal.

Butler—See Riverside Specialty Works.

Cyclone—See Holland Brass Works.

Felker Bros. Mfg. Co., Marshfield, Wis. "Perfection."

General Metals Co., 6189 Greenwood Ave., Detroit, Mich. "Serkulater."

Holland Brass Works, 616-18 W. Monroe St., Chicago, Ill. "Cyclone."

Little Wonder—See Riverside Specialty Co.

Lobee Pump & Machinery Co., 111-19 Dearborn St., Buffalo, N. Y.

Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich. "Ospeco."

Milwaukee Circulating Pump Co., 387-89 Tenth St., Milwaukee, Wis. (See page 749.)

Motor Cooling System Co., Charles & Lombard Sts., Baltimore, Md.

Ospeco—See Michigan Auto Products Co.

Parker White Metal & Machine Co., 23d & Railroad Sts., Erie, Pa.

Perfection—See Felker Bros. Mfg. Co.

Perry Auto Co., 209 Seventh St., Pittsburgh, Pa. "Security."

Peru Brass & Mfg. Co., Peru, Ind.

Riverside Specialty Co., Riverside, Cal. "Little Wonder," "Butler."

Security—See Perry Auto Co.

Serkulater—See General Metals Co.

Schilling Mfg. Co., 928-30 Pacific Ave., Long Beach, Cal. "Vanreush."

Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 507.)

Vanreush—See Schilling Mfg. Co.

Westco—See Western Pump Co.

Western Pump Co., Front & Gaines Sts., Davenport, Ia. "Westco."

PUMPS AND AIR COMPRESSORS, GARAGE—See Compressors, Garage Air

PUMPS, WATER CIRCULATING MOTOR BOAT—See Pumps, Motor Boat Water Circulating

PUMPS, WATER CIRCULATING AIRCRAFT—See Pumps, Aircraft Water Circulating

PUNCHES, Arch and Washer

Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.

Kraeuter & Co., Newark, N. J. (See page 711.)

PUNCHES, Center, Prick and Drift

Acme Engineering & Mfg. Co., 355 Union Park Ave., Chicago, Ill.

Beall Bros., Fourth St., Alton, Ill.

Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.

Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.

Buffum Tool Co., Louisiana, Mo. (See page 529.)

Carver Tool Works, Spring Valley, N. Y.

Cincinnati Tool Co., Main Ave., Norwood, O. "Hargrave."

Easy Hold—See West Haven Mfg. Co.

Fairmount Tool & Forging Co., 10611 Quincy Ave., Cleveland, O.

Gogle Hand-Forged Tool Co., 1941 Polk St., San Francisco, Cal.

Goodell-Pratt Co., Greenfield, Mass.

Hargrave—See Cincinnati Tool Co.

Harrold Tool & Forge Co.—See Wiebusch & Hilger.

Kortick Mfg. Co., 345 First St., San Francisco, Cal.

Kraeuter & Co., Newark, N. J. (See page 711.)

Marcy Tool Works, Putnam, Conn.

Mayhew Steel Products, 291 Broadway, New York, N. Y.

Milwaukee Tool & Forge Co., 220 Becher St., Milwaukee, Wis.

O. K.—See West Haven Mfg. Co.

Peck, Stow & Wilcox Co., Southington, Conn "Pexto."

Pexto—See Peck, Stow & Wilcox Co.

Red Devil—See Smith & Hemenway.

S. & I. Co., 55-57 Governor St., Springfield, Mass.

Smith & Hemenway, 130 Colt St., Irvington, N. J. "Red Devil."

Starrett Co., L. S., Athol, Mass.

Storts & Son, John, 210-12 Vine St., Philadelphia, Pa.

Syracuse Twist Drill Co., 936 Grape St., Syracuse, N. Y.

Tuck Mfg. Co., 74 Ames St., Brockton, Mass.

Union Tool Co., 48 E. River St., Orange, Mass.

V. & B.—See Vaughan & Bushnell Mfg. Co.

Vaughan & Bushnell Mfg. Co., 2114-38 Carroll Ave., Chicago, Ill. "V. & B."

West Haven Mfg. Co., 22 Elm St., (W. Haven) New Haven, Conn. "O. K." "Easy Hold."

Wiebusch & Hilger, 110 Lafayette St., New York, N. Y. (Sole Selling Agents for Harrold Tool & Forge Co., Columbiana, O.

PUNCHES, DEALERS IN—See Machinery, Dealers in

PUNCHES, DRIFT—See Punches, Center, Prick and Drift

PUNCHES, HAND—See Punches, Portable Hand

PUNCHES, Portable Hand

Armstrong-Blum Mfg. Co., 333 N. Francisco Ave., Chicago, Ill. "Marvel."

Bicknell Mfg. & Supply Co., 22 N. Academy St., Janesville, Wis.

Buffalo Forge Co., 490 Broadway, Buffalo, N. Y.

Clough, R. M., Tolland, Conn.

Excelsior Tool & Machine Co., 31st St. & Ridge Ave., East St. Louis, Ill. "Little Giant."

Jiffy—See Koch & Co.

Kidder Mfg. Co., J. F., Burlington, Vt.

Koch & Co., Paul W., 21 S. Wells St., Chicago, Ill. "Jiffy."

Little Giant—See Excelsior Tool & Machine Co.

Little Giant Punch & Shear Co., 218 S. Market St., Sparta, Ill.

Marvel—See Armstrong-Blum Mfg. Co.

Parker Supply Co., 785 E. 135th St., New York, N. Y.

Schatz Mfg. Co., 17 Fairview Ave., Poughkeepsie, N. Y.

PUNCHES, PRICK—See Punches, Center Prick and Drift

PUNCHES, WASHER—See Punches, Arch and Washer

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Make Your Truck

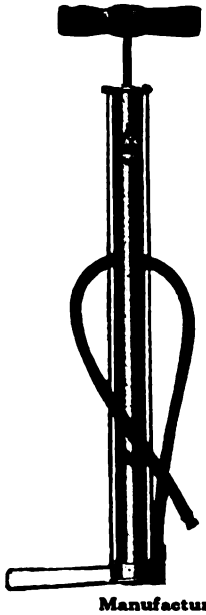
SURE FOOTED AS A CAT WITH A B C

SAFETY GRIPS

A Real Proposition for Jobbers and Dealers

American Business Corporation
Automotive Division
1780 Broadway New York

The UTILITY HAND TIRE PUMP



Constructed of iron and steel. Barrel, 1⅝x20 inches. Heavy steel tubing. Cast base, with ball check valve, seating on brass. Folding foot strap. Removable handle. ¼ in. tubing, 26 in. long, with standard connection. Total length of pump, 24 in. ⅝ in. cold rolled plunger rod with cast plunger and high grade leather cup.

All the air is expelled at each down stroke.

Manufactured Only By
ALBERT LEA SPRAYER CO.
Albert Lea, Minn., U. S. A.

PETERS PRODUCTS

TRADE MARK

TIME AND LABOR SAVING EQUIPMENT

UNIVERSAL BEARING REAMER **$300.00**
A combination boring and babbitting tool for main and connecting rod bearings.
Reams all bearings to size and alignment with one setting.
Can be operated in all standard types of four, six, eight, and twelve cylinder motors.
Full universal adjustment that can be set standard for any one type of motor.

CRANKSHAFT GRINDER **$75.00**
A hand tool producing results that surpass an expensive power driven machine.
ONE quick and simple adjustment.
Can be operated without dismantling the motor.
Will true a shaft in one-fifth the time ordinarily required.
Self-contained, requiring no replacements.

CYLINDER SURFACE PLANER **$6.00**
For finishing off the excess Metallic Filler from a scored cylinder repair, in perfect cylindrical alignment.
Cannot scar the cylinder-wall.
Instantly adjustable to all sizes of cylinders.

METALLIC FILLER . . . . . **per pound $5.50**
For the repair of scored cylinders, cracked water jackets and other imperfections in iron, steel, brass and bronze castings.
Working at 300° makes a wear-resisting repair which will sustain a pressure of 75 to 100 pounds per square inch.

ALUMINUM BRAZING COMPOUND . . . . . **per pound $3.50**
Guaranteed non-corrosive—resisting chemical action of oil.
Working at 500° makes a stronger repair than any known method of aluminum welding or soldering and without risk of warping or distortion.

Widener Building **PETERS, INCORPORATED** Philadelphia, Pa.

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PUNCTURE SEALING COMPOUNDS—See Compounds, Puncture Sealing

PURIFIERS, Acetylene Gas

(For insertion in pipe line between generator and lamps to remove impurities from the gas and prevent flickering of lights)

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

PURIFIERS, GASOLINE—See Strainers or Separators, Gasoline

PURIFIERS, Oil

De Laval Separator Co., New York, N. Y. (See page 245.)

PUSH BUTTON SWITCHES—See Switches, Light

PUSH BUTTONS—See Buttons, Push

PUSH ROD SILENCERS, OVERHEAD VALVE—See Silencers, Overhead Valve

PUSH RODS—See Rods, Adjustable Valve Lift

PUSHES, Foot

(For ringing electric bells)

Rousseau, David, Ossining, N. Y.

PUTTEES, Aviators

Spalding & Bro., A. G., 126 Nassau St., New York, N. Y.

PUTTY, RUBBER—See Compounds, Tire

PUTTY, TIRE—See Compounds, Tire Repair

PYROMETERS

American Steam Gauge & Valve Mfg. Co., 208-20 Camden St., Boston, Mass.

Brown Instrument Co., Wayne & Windrim Aves., Philadelphia, Pa.

Du Vivier, Ernest H., 30 Church St., New York, N. Y. "Importer."

Englehard, Charles, 30 Church St., New York, N. Y.

Esterline Co., 227 E. South St., Indianapolis, Ind.

Hanovia Chemical & Mfg. Co., 233-39 N. J. Railroad Ave., Newark, N. J.

Hoskins Mfg. Co., 4435 Lawton Ave., Detroit, Mich.

Leeds & Northrup Co., 4919 Stenton Ave., Philadelphia, Pa.

Monopivot—See Wilson-Maeulen Co.

Pyods—See Wilson-Maeulen Co.

Pyroscope—See Shore Instrument & Mfg. Co.

Queen-Gray Co., 616-18 Chestnut St., Philadelphia, Pa.

Schaeffer & Budenberg Mfg. Co., 338 Berry St., Brooklyn, N. Y.

Shore Instrument & Mfg. Co., 9025-29 Van Wyck Ave., New York, N. Y. "Pyroscope."

Stupakoff Laboratories, 410 Amberson Ave., Pittsburgh, Pa.

Tapalog—See Wilson-Maeulen Co.

Taylor Instrument Companies, 95 Ames St., Rochester, N. Y. "Tycos."

Thwing Instrument Co., 8339 Lancaster Ave., W., Philadelphia, Pa. "Twinko."

Twinko—See Thwing Instrument Co.

Tycos—See Taylor Instrument Cos.

Wilson-Maeulen Co., 730 E. 143d St., New York, N. Y. "Pyods," "Tapalog," "Monopivot."

Zaubitz, August, 97 Cliff St., New York, N. Y.

QUICK DETACHABLE RIMS—See Rims, Quick Detachable

QUICK DETACHABLE STEERING WHEEL RINGS, TRACTOR—See Rings, Tractor Quick Detachable Steering

QUICK STOP TRACTOR HITCHES, AUTOMATIC — See Hitches, Automatic Quick Stop Tractor

RACES, BALL—See Cups, Ball

RACKS, BODY HANDLING—See Trucks, Body Handling

RACKS, ELECTRICAL TESTING—See Instruments, Electrical Circuit Testing

RACKS, ENGINE REPAIR—See Stands, Engine Repair

RACKS, Hat

(Cord hat racks or holders for use in closed cars; see also Hangers, Hat)

Bridgeport Coach Lace Co., Bridgeport, Conn. (See page 167.)

Columbia—See Hortsmann Co.

Hortsmann Co., Wm. H., Fifth & Cherry Sts., Philadelphia, Pa. "Columbia."

Schlegel Mfg. Co., 277 N. Goodman St., Rochester, N. Y.

RACKS, LUGGAGE, FOR FORDS — See Racks, Trunk

RACKS, Metal Tool, Stock and Tire

Advance Engineering Co., 6539 Metta Ave., Cleveland, O.

All-Steel-Equipt Co., 150 John St., Aurora, Ill.

Badger Mfg. Corp., Milwaukee, Wis. (See page 173.)

Berger Mfg. Co., 1038 Belden Ave. N. E., Canton, O. "Berloy."

Berloy—See Berger Mfg. Co.

Bracegirdle, H. V., 1777 Broadway, New York, N. Y. "Mankey."

Champion—See Western Tool & Mfg. Co.

Cleveland Wire Spring Co., 1281 E. 38th St., Cleveland, O.

Crackerjac—See Reed Mfg. Co.

Cyclone Fence Co., Waukegan, Ill.

Darby & Sons Co., Edward, 412 N. 18th St., Philadelphia, Pa. "Pen Dar."

Dexter Metal Mfg. Co., Front & Arch Sts., Camden, N. J.

Dow Wire & Iron Works, Franklin, Buchanan & Pocahontas Sts., Louisville, Ky. (See page 157.)

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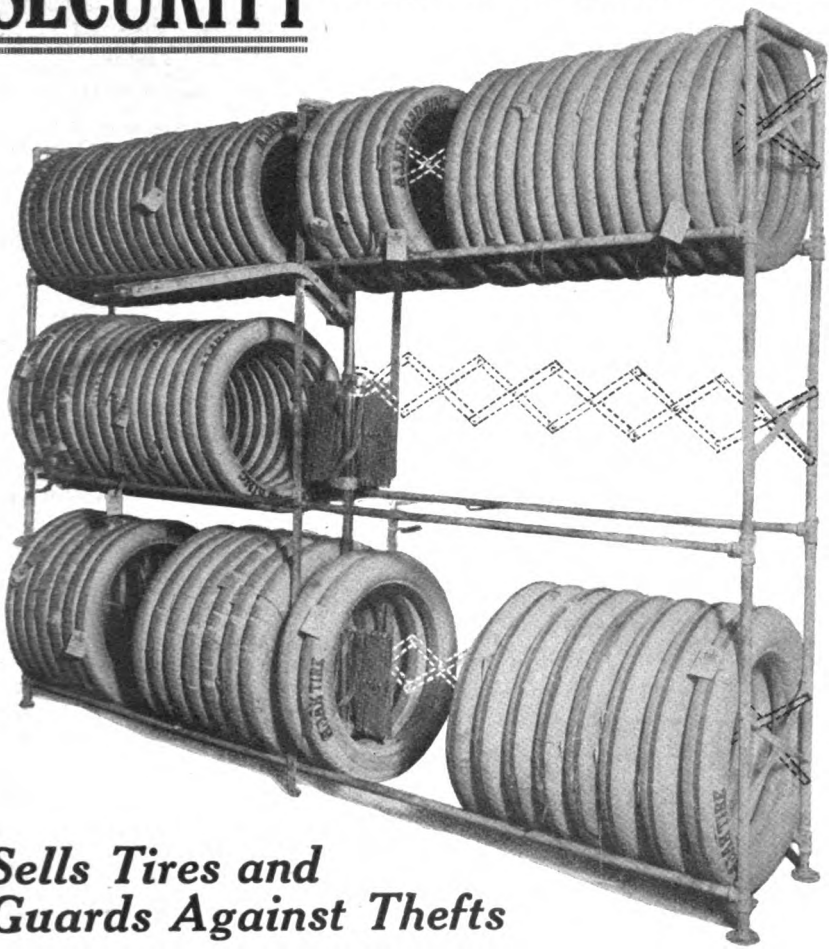
SECURITY DISPLAY TIRE RACK



Sells Tires and Guards Against Thefts

This is the safest, most convenient tire display rack ever devised. It enables the dealer to display his stock to best advantage, within the smallest space and in orderly, systematic fashion.

The entire rack and every tire in it may be securely locked, preventing theft and unauthorized handling. As many units as may be needed can be combined, as with sectional bookcases.

In the Security Display Tire Rack tires are protected in a novel way, by means of Lazy Tongs operating from a lever which locks and unlocks all sections. The rack itself is constructed of strong steel tubing; the Lazy Tongs are made of flat steel.

Tires cannot be removed from the Rack while it is locked or closed. The unlocking or opening is done by a single movement of the handle. Moreover, any attempt to force the toggle guard open has only the effect of closing it tighter. A Yale spring lock built into the operating handle affords the fullest protection.

The whole arrangement offers so many advantages that every tire dealer should write for further details to

THE W. J. SMITH COMPANY
1834 BROADWAY .. .. NEW YORK CITY

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RACKS, Metal Tool, Stock and Tire (Continued)

Durand Steel Locker Co., 1599 Ft. Dearborn Bank Bldg., Chicago, Ill. (See page 603.)

Elgin Motor Power Mfg. Co., 416 Third Ave., Cedar Rapids, Iowa.

Empire Art Metal Co., College Point, N. Y.

Fairbanks Co., New York, N. Y. (Sole Distributors for Servistock System Corp., Detroit, Mich.) (See pages 137 to 140.)

Federal Steel Fixture Co., 4545 W. Homer St., Chicago, Ill.

Foster Bros. Mfg. Co., 811 Broad St., Utica, N. Y.

Fouts Co., C. C., Middletown, O.

Hetts Co., Dime Bank Bldg., Detroit, Mich.

Jefferis Co., R. W., 11th & Linden Sts., Camden, N. J.

Jiffy—See Welton Mfg. Co.

Kund & Eiben Mfg. Co., 204-24 Warrington Ave., Pittsburgh, Pa.

Lupton's Sons Co., David, Allegheny & Tulip Sts., Philadelphia, Pa.

Lyon Metallic Mfg. Co., (Montgomery), Aurora, Ill.

M. & M. Co., 500 Prospect St., Cleveland, O.

Mankey—See Bracegirdle, H. V.

Manufacturing, Equipment & Engineering Co., Framingham, Mass. "Meeco."

Meeco—See Manufacturing, Equipment & Engineering Co.

Multi-Unit—See National Scale Co.

National Scale Co., 9 Montgomery St., Chicopee Falls, Mass. "Multi-Unit."

New Britain Machine Co., Chestnut St., New Britain, Conn.

Nichol-Straight Foundry Co., 323 W. Austin Ave., Chicago, Ill.

Ohio Mfg. Co., Painesville, O.

Pen-Dar—See Darby & Sons Co.

Perfection Garage Equipment Co., Hagerstown, Md. (See page 803.)

Red Seal Mfg. Co., Cedar Rapids, Ia.

Reed Mfg. Co., Even L., Sterling, Ill. "Crackerjac."

Security—See Smith Co.

Shults & Co., H. H., 24 Commercial St., Gowanda, N. Y.

Smith Co., W. J., 1834 Broadway, New York, N. Y. "Security." (See page 755.)

Terrell's Equipment Co., Hall & Hilton Sts., Grand Rapids, Mich.

Van Dorn Iron Works Co., 2685 E. 79th St., Cleveland, O.

Wallace Supplies Mfg. Co., 420 Orleans St., Chicago, Ill.

Welton Mfg. Co., Majestic Bldg., Detroit, Mich. "Jiffy."

Western Tool & Mfg. Co., Springfield, O. "Champion."

RACKS, ROBE—See Rails, Robe

RACKS, STOCK—See Racks, Metal Tool

RACKS, TIRE—See Racks, Metal Tool

RACKS, TOOL—See Racks, Metal Tool

RACKS, Trunk

Highton & Sons Co., Wm., Nashua, N. H.

Gray, Jr., Niel, Oswego, N. Y.

Reese Machine & Tool Works, S., 224-30 W. Main St., Plymouth, Pa.

Shugers Mfg. Co., 1002-04 S. Los Angeles St., Los Angeles, Cal. (See page 337.)

Thompson Co., Robert, 1015 S. Grand Ave., Los Angeles, Cal. (See page 1119.)

RACKS, TRUNK, and LUGGAGE CARRIERS, for Fords

Banner Accessory Mfg. Co., St. Louis, Mo. (See page 601.)

Brocksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.

Hastings Mfg. Co., 36 Mill St., Hastings, Mich. (See page 567.)

Republic Auto Parts Co., 31-35 Tenth St., Long Island City, N. Y. "Sterling."

Richards-Wilcox Mfg. Co., Third St. & C. B. & Q. R. R. Tracks, Aurora, Ill.

Sterling—See Republic Auto Parts Co.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

RADIAL DRILLS—See Drills, Radial

RADIATOR CAP LOCKS—See Locks, Radiator Cap and Thermometer

RADIATOR CAPS—See Caps, Brass Radiator; also Caps, Rubber Radiator

RADIATOR CAPS FOR FORDS—See Caps, Radiator

RADIATOR CLEANING COMPOUNDS—See Compounds, Radiator Cleaning

RADIATOR CONDENSERS—See Condensers, Radiator

RADIATOR CONNECTIONS—See Hose, Radiator

RADIATOR COVERS—See Covers, Radiator; also Covers, Automatic Radiator; also Covers, Metal Radiator

RADIATOR CRADLES FOR FORDS—See Cradles, Radiator

RADIATOR DISCS—See Discs, Radiator

RADIATOR FANS—See Fans, Radiator

RADIATOR FENDERS — See Fenders or Guards, Truck Radiator

RADIATOR GUARDS — See Fenders or Guards, Truck Radiator

RADIATOR HEATERS—See Heaters, Radiator

RADIATOR HOODS FOR FORDS—See Hoods, Radiator

RADIATOR HOSE—See Hose, Radiator

RADIATOR LACING—See Lacing, Fabric Radiator; also Leather, Rawhide Lace

RADIATOR MONOGRAMS — See Monograms, Ornamental

RADIATOR ORNAMENTS—See Ornaments, Radiator; also Flags; also Holders, Flag; also Monograms, Ornamental

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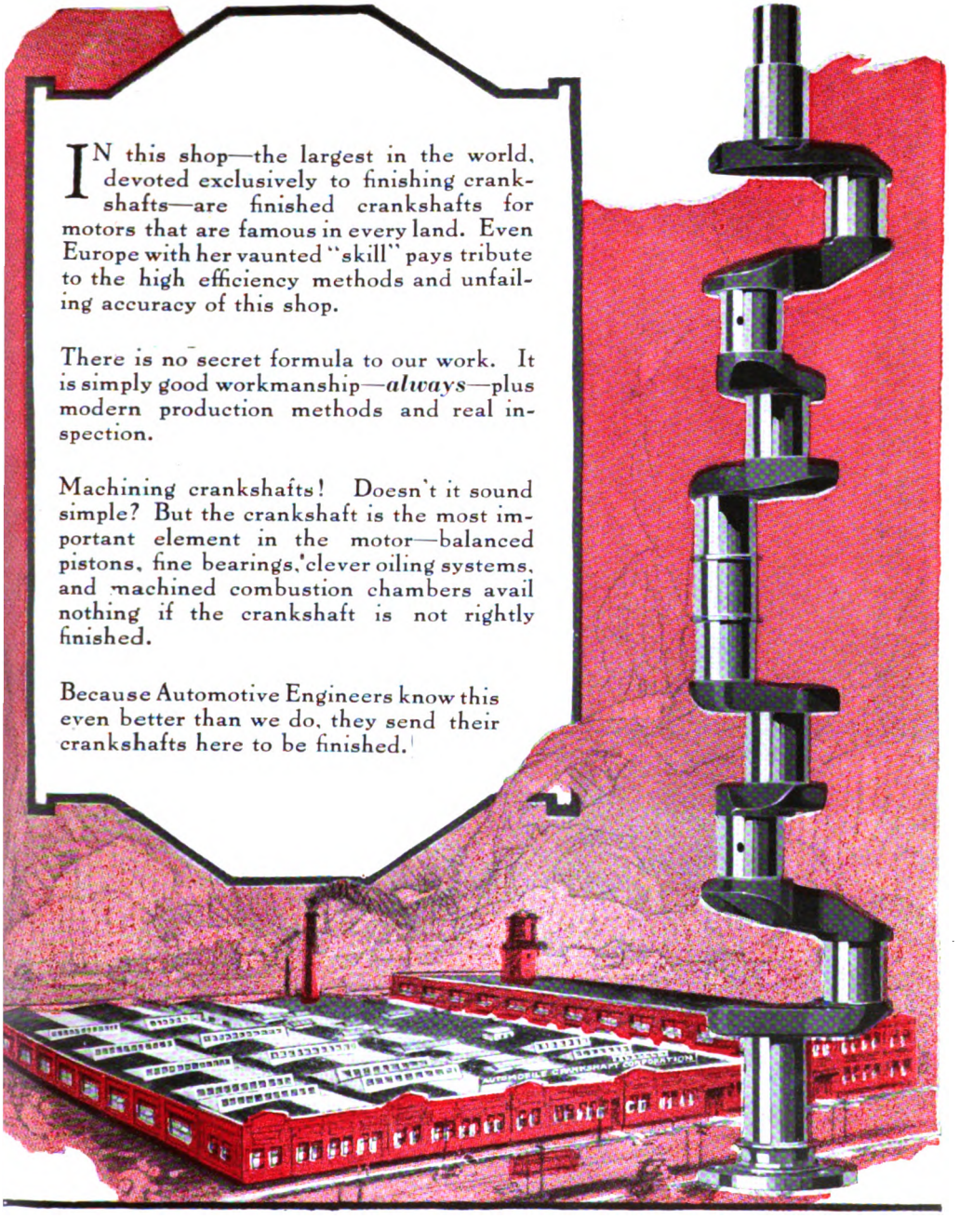
IN this shop—the largest in the world, devoted exclusively to finishing crankshafts—are finished crankshafts for motors that are famous in every land. Even Europe with her vaunted "skill" pays tribute to the high efficiency methods and unfailing accuracy of this shop.

There is no secret formula to our work. It is simply good workmanship—*always*—plus modern production methods and real inspection.

Machining crankshafts! Doesn't it sound simple? But the crankshaft is the most important element in the motor—balanced pistons, fine bearings, clever oiling systems, and machined combustion chambers avail nothing if the crankshaft is not rightly finished.

Because Automotive Engineers know this even better than we do, they send their crankshafts here to be finished.



AUTOMOBILE CRANKSHAFT CORP.

FINISHERS OF CRANKSHAFTS

DETROIT ~ ~ ~ ~ U.S.A.

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SHELDON

I

FRONT AXLES

WORM GEAR REAR AXLES

SPRINGS

FOR MOTOR TRUCKS

Preliminary Recommendations Shown on Next Page
Write for Detailed Information

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¾ to 1 Ton Truck Equipment

FRONT AXLE. Model D-260, Track 56", Spoke Width 1⅝", Spring Centers 28½", Width Springs 2", Dia. Clip Hole 21/32".

REAR AXLE. Model W-1601, Track 56", Spoke Width 1½", Spring Centers 39", Spring Width 2½", Dia. Spring Clip Hole 25/32", Worm Gear Ratio 6 to 1.

SPRINGS. Front, Width 2", Length 38". Rear, Width 2¼", Length 49".

1 to 1½ Ton Truck Equipment

FRONT AXLE. Model 33-FA-500, Track 56", Spoke Width 1¾", Spring Centers 29", Width Springs 2¼", Dia. Clip Hole 21/32".

REAR AXLE. Model W-1501, Track 57", Spoke Width 1¾", Spring Centers 39", Width Springs 2½", Dia. Spring Clip Hole 13/16", Worm Gear Ratio 6.5 to 1, or 7.8 to 1.

SPRINGS. Front, Width 2¼", Length 39". Rear, Width 2½", Length 50".

1½ to 2 Ton Truck Equipment

FRONT AXLE. Model D-343, Track 58", Spoke Width 2", Spring Centers 31½", Width Springs 2½", Dia. Clip Hole 25/32".

REAR AXLE. Model W-103, Track 59½" and 62", Spoke Width 2", Spring Centers 39", Spring Width 3", Spring Clip Hole 13/16", Worm Gear Ratio 7.75 to 1, 8.66 to 1.

SPRINGS. Front, Width 2½", Length 41". Rear, Width 3", Length 53".

2½ Ton Truck Equipment

FRONT AXLE. Model D-370, Track 58", Spoke Width 2", Spring Centers 31½", Width Springs 2½", Dia. Clip Hole 25/32".

REAR AXLE. Model W-21, Track 58", Spoke Width 2½", Spring Centers 39", Spring Width 3", Dia. Spring Clip Hole 15/16", Worm Gear Ratio 7.75 to 1, 8.75 to 1 Ratio.

SPRINGS. Front, Width 2½", Length 42". Rear, Width 3", Length 54".

3½ Ton Truck Equipment

FRONT AXLE. Model 4-FA-20, Track 62", Spoke Width 2½", Spring Centers 33½", Width Springs 3", Dia. Clip Hole 29/32".

REAR AXLE. Model W-31, Track 69⅝", Spoke Width 3", Spring Centers 42", Spring Width 3½", Dia. Spring Clip Hole 1 1/16", Worm Gear Ratio 8.75 to 1, 10.25 to 1.

SPRINGS. Front, Width 3", Length 44". Rear, Width 3½", Length 56".

5 Ton Truck Equipment

FRONT AXLE. Model 5-FA-30, Track 68", Spoke Width 3", Spring Centers 34", Width Springs 3½", Dia. Clip Hole 29/32".

REAR AXLE. Model W-51, Track 73", Spoke Width 3½", Spring Centers 44", Spring Width 4", Dia. Spring Clip Hole 1 1/16", Worm Gear Ratio 8.75 to 1, 10.25 to 1.

SPRINGS. Front, Width 3½", Length 46". Rear, Width 4", Length 62".

The Sheldon Axle and Spring Co.

Wilkes-Barre, Penn.

Licensed under the Kardo Patents

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Kenyon Cord Tires and Tubes

The Kenyon Cord Tire is made full oversize, with black rectangular tread and gray side walls.

The Kenyon Cord Tire is essentially a quality tire, built on the principle that the best is ever the cheapest.

The Kenyon Rectangular Tread maintains superior non-skid resistance to forward or sideway impulses.

The Kenyon Tread has a continuous unbroken road surface, affording complete steering ease.

The Kenyon Tire inflated to the maximum still possesses the greatest resiliency: *Result:* Long life—greater mileage—comfort.

Sold by reliable dealers.

C. KENYON COMPANY, Inc.

Makers of Kenyon Weatherproof and Kenreign Waterproof Coats.

DEALER'S SERVICE DEPT., 754 Pacific St. Brooklyn, N. Y.

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Continental Motors will be on exhibition at the Chicago Automobile Show, Coliseum Gallery 50-51.

There is no one factor, of course, that is responsible for the dependability of the Red Seal Motor. Red Seal performance is the result of a combination of factors each of which contributes toward the perfection of the finished motor. ¶ But in the Continental Testing Room there is just a suggestion of the eternal care that is largely responsible for Red Seal quality. For here, newly completed Red Seal motors are tested under their own power—dismantled — inspected — re-assembled and tested again—all as part of the program for upholding the reputation of quality that is everywhere associated with the Continental Red Seal.

CONTINENTAL MOTORS CORPORATION

Offices: Detroit, U. S. A. Factories: Detroit and Muskegon

Largest Exclusive Motor Manufacturers in the World

Continental Motors

STANDARD POWER FOR TRUCKS, AUTOMOBILES AND TRACTORS

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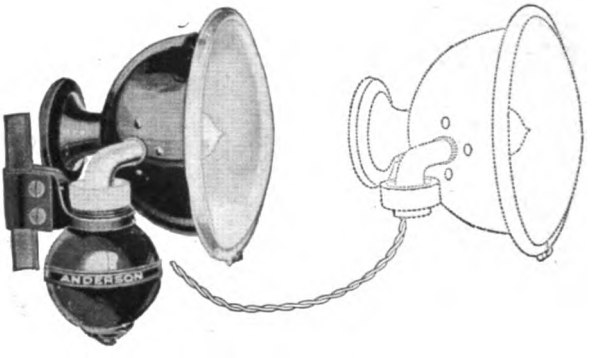
ANDERSON

AUTOREELITE

MORE THAN JUST A SPOTLIGHT



The AUTOREELITE is the only spotlight with an automatic extension trouble-light feature. This is a real necessity for country driving and a valuable feature at any time and place where trouble may occur. Show this to a motorist and he immediately appreciates its usefulness, for it robs touring of its most disagreeable feature—the fear of a breakdown on the road after dark.

DIRECTIONS—To use as a "trouble light" simply unscrew the knurled nut and withdraw the lamp to desired length. 12 feet of cord on an automatic reel. Cord winds and unwinds just like a curtain roller.

The Anderson Autoreelite is an accessory for which you'll find a ready sale.

Stocked by the best jobbers. If yours does not carry it, write us and we'll tell one who does, or supply you direct.

Write for complete details, list No. D-301-A and discounts.

Cat. No.	Model	Price
3130	B-6, without Mirror	$9.50
3140	B-6, with Mirror	10.00
3131	B-7, without Mirror	11.50
3141	B-7, with Mirror	12.00
3161	SB-7, all Nickel	16.00
3171	SB-7, "Goldenlyte"	25.00

Anderson Electric & Equipment Co.

154-160 Whiting Street **Chicago, Illinois**

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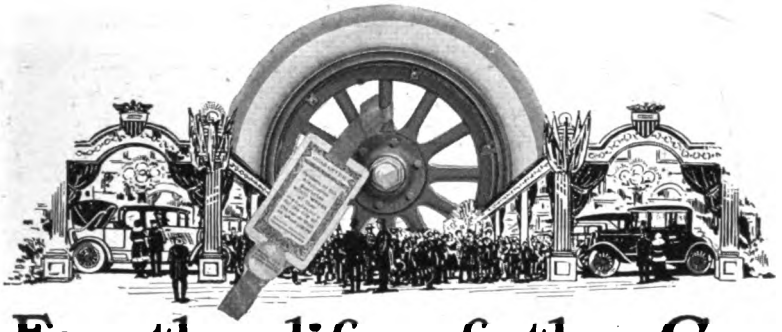
NOTE THE WOOD WHEELS EVERYWHERE



For the life of the Car

Wood Wheels manufactured by the members of the Automotive Wood Wheel Manufacturers' Association are guaranteed for the life of the car on which they are placed.

This is a remarkable obligation. Wood Wheels are working units. They must withstand unnumbered road jolts and side-thrusts. Still, by the terms of this guarantee they are pledged to outlive other parts that their resiliency actually protects from the shocks of service.

This guarantee sets forth, as nothing else could, the degree of perfection that has been attained in the construction of Automotive Wood Wheels. It expresses the faith that the makers of Wood Wheels have in their product. And it supplies a new and even greater reason why Wood Wheels will continue to be featured as standard equipment on the world's best cars.

AUTOMOTIVE WOOD WHEEL MANUFACTURERS' ASSN.
105 West Monroe Street Chicago, Illinois

WOOD WHEELS for MOTOR VEHICLES

For the good of the industry, the Automotive Wood Wheel Manufacturers' Association is endeavoring to achieve Hub Standardization.

Members of this Association guarantee Wood Wheels of their manufacture for the life of the car or truck on which placed.

Automotive Wood Wheel Manufacturers' Association

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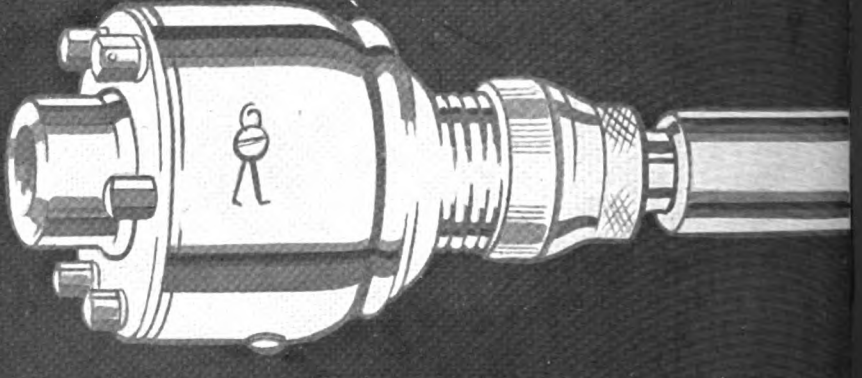
Hart

UNIVERSAL



Quality plus

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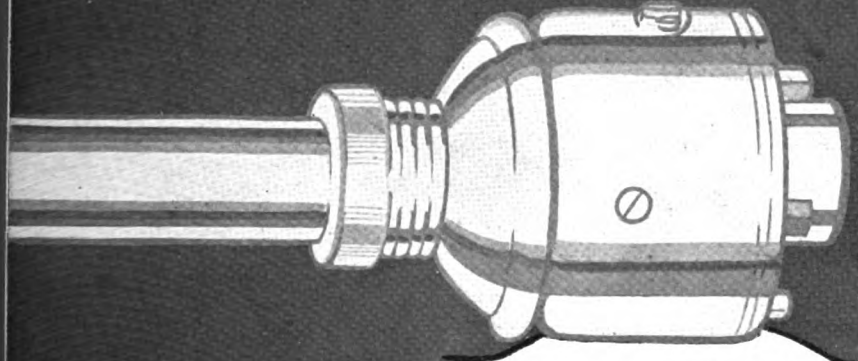
JOINTS



There is No Question About Hartford Being the Joint of Universal Satisfaction

Hartford Automotive Parts Company
Hartford, Conn.

Service

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THE SPENCER METAL PRODUCTS CO. SPENCER, OHIO.

Guaranteed Axle and Drive Shafts

Spencer quality in Guaranteed Axle and Drive Shafts is assured through the use of the celebrated special chrome Molybdenum Steel as adopted for axle, drive and crank shafts in the leading high-priced cars.

Code	Name	Descr	No. Per Case	Wt. Per Case
AL-1	Allen, 1916-17-18-19		10	
MI-4	Abbott-Detroit, 1916-17, Right	Square	10	125
MI-5	Abbott-Detroit, 1916-17, Left	Square	10	120
AN-1	Apperson, 1915-20, Right	Splined	10	160
AN-2	Apperson, 1915-20, Left	Splined	10	150
BE-1	Briscoe B 24, 1917-20	Splined	10	98
BK-1	Buick B 36-37-38, C 36-37, Right	Square	10	168
BK-2	Buick B 36-37-38, C 36-37, Left	Square	10	150
BK-3	Buick 10-32-33-34-35-36	Square	10	110
BK-4	Buick D-E-H-K, 45-46-47-44, 1917-18-19-20,	Splined	10	128
BK-5	Buick 21-25-28-29-30-31, Right	Square	10	145
BK-6	Buick 21-25-28-29-30-31, Left	Square	10	130
BK-7	Buick B 24-25, C 24-25, EX 24-25, Right,	Square	10	130
BK-8	Buick B 24-25, C 24-25, EX 24-25, Left	Square	10	120
BK-9	Buick B 54-55, C 54-55, Right	Square	10	190
BK-10	Buick B 54-55, C 54-55, Left	Square	10	170
BK-11	Buick 3-4, C 4, D 4, Right	Square	10	170
BK-12	Buick 3-4, C 4, D 4, Left	Square	10	160
BK-13	Buick D 54-55, Right	Splined	10	193
BK-14	Buick D 54-55, Left	Splined	10	170
OA-1	Buick D 34-35, E 34-35, DX 34-35	Square	10	103
EX-1	Chalmers 630, 35 C	Splined	10	160
CS-1	Chalmers 630, 35 B, "Pin"		10	
CR-1	Chandler, 1914-17	Splined	10	125
CR-2	Chandler, 1918-20	Splined	10	140
CR-3	Chandler, Pinion Shaft		10	45
CT-1	Chevrolet 490		25	210
CT-2	Chevrolet Baby Grand, 1914-17	Square	10	115
CT-4	Chevrolet, Drive Shaft, 490, 1917	Splined	10	154
CT-5	Chevrolet, Drive Shaft, 490, 1918-20	Splined	10	154
CE-1	Cole "8," 1916-19	Sp. both ends	10	145
EX-1	Cole 850	Splined	10	160
GT-1	Crow-Elkhart, Turned Center	Sp. both ends	10	83
EX-1	Davis, 1920	Splined	10	160
DE-1	Dodge	Sq. both ends		105
DT-1	Dort 5 F, 1310	Square	10	105
DT-2	Dort 15 F, 310	Square	10	105
GT-1	Drexel	Sp. both ends	10	83
AL-1	Elgin, 1918-19-20		10	
EX-1	Essex	Splined	10	160
FD-1	Ford "56," Tread		25	215
FD-2	Ford "60," Tread		25	235
FD-3	Ford One-Ton Truck	Splined	10	165
FD-4	Ford, Drive Shaft, Model "T"	Square	10	145
FD-5	Ford One-Ton Truck Drive Shaft	Splined	10	270
GT-1	Grant "6"	Sp. both ends	10	83
GT-2	Grant, Pinion Shaft, Small Taper, 1917	Splined	10	30
GT-3	Grant, Pinion Shaft, Large Taper, 1918-20	Splined	10	30
HS-1	Haynes 34, 1916-18, Right		10	180
HS-2	Haynes 34, 1916-18, Left		10	150
HS-3	Haynes 45, 1919-20, Right		10	178
HS-4	Haynes 45, 1919-20, Left		10	148
HN-1	Hudson Super Six		10	
BK-3	Hudson, 4 Cyl., "20"	Square	10	110
HE-1	Hupmobile, Model "R"		10	115
MI-2	Interstate, Right	Splined	10	120
MI-3	Interstate, Left	Splined	10	118
MI-4	Interstate, Right	Square	10	120
MI-5	Interstate, Left	Square	10	120
MI-2	Jackson 349, 1917, Right	Splined	10	120
MI-3	Jackson 349, 1917, Left	Splined	10	118
BK-3	Krit "54," 1913-14-15	Square	10	110
EX-1	Liberty, 1916-17	Splined	10	160
CS-1	Liberty, 1918-19		10	
ML-1	Maxwell, Model 25, Right		10	95
ML-2	Maxwell, Model 25, Left		10	95
ML-3	Maxwell, Drive Shaft, Model 25, 1917,	Splined	10	145
ML-4	Maxwell, Drive Shaft, Model 25, 1918-19	Splined	10	155
ML-5	Maxwell, 1920		10	95
MI-1	Mitchell C 42, M 7-42	Sp both ends	10	140
MI-2	Mitchell D 40, 1917-18, Right	Splined	10	120
MI-3	Mitchell D 40, 1917-18, Left	Splined	10	118
MI-4	Mitchell D 40, 1916-17, Right	Square	10	120
MI-5	Mitchell D 40, 1916-17, Left	Square	10	120
SN-2	Moon, 6-30		10	100
NH-1	Nash or Jeffery, 1916-20		10	
OA-1	Oakland 34 B and 34 C, 1917-20	Square	10	103
OE-1	Oldsmobile 43, 4 Cyl., 1916		10	118
OE-2	Oldsmobile 44, 8 Cyl., 1916-17-18-19		10	
OE-3	Oldsmobile 45 A, 45 B, 8 Cyl., 1920		10	
OE-4	Oldsmobile 37, 6 Cyl., 1917-18-19-20		10	
OD-1	Overland 69-79-80-81-83, Right	Square	10	125
OD-2	Overland 69-79-80-81-83, Left	Square	10	125
OD-3	Overland 85, Right	Square	10	133
OD-4	Overland 85, Left	Square	10	127
OD-5	Overland 90, Touring, Right	Square	10	115
OD-6	Overland 90, Touring, Left	Square	10	105
OD-7	Overland 75 or 90 CC, Right	Square	10	90
OD-8	Overland 75 or 90 CC, Left	Square	10	85
OD-9	Overland "4," 1920, Axle		10	88
MI-1	Paige 639, Right	Splined	10	120
MI-3	Paige 639, Left	Splined	10	118
MI-4	Paige 636-38-39, Right	Square	10	120
MI-5	Paige 636-38-39, Left	Square	10	120
BK-3	Paige 25, 4 Cyl.	Square	10	110
HN-1	Peerless		10	
RC-1	Republic Truck, 1 and 1½ Ton, M 10 and 11 F		10	125
SN-1	Saxon, 6 Cyl., 1916-17		10	100
SN-2	Saxon, 6 Cyl., 1918-20		10	100
OA-1	Scripps-Booth, 6 Cyl.	Square	10	103
FD-6	Smith Form A Truck, One Ton		25	185
SR-1	Studebaker, 4 and 6 Cyl., 1914-18	Splined	10	127
SR-2	Studebaker "Special"	Splined	10	165
SR-2	Studebaker "Big Six"	Splined	10	165
GT-1	Tulsa	Sp both ends	10	83
EX-1	Velie 15-27-39	Splined	10	160
VM-1	Vim	Square	10	125

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HERE is a Covert tool the product of which is Silence.

So accurate is the large master gear, and so sensitive the testing instrument that, when a production gear is slowly rolled between, the dial shows variations as small as the twenty-fifth of a hair's breath.

Every Covert Transmission gear must pass this warrant of its perfect accuracy.

Accurate gears are silent gears.

The vehicle builder who offers you a product equipped with Covert Transmission well deserves, therefore, the higher selling price he may justly ask you to pay.

COVERT GEAR COMPANY, INC.

Sales, Engineering and Factory: Lockport, N. Y.
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Now Come Packed In Handy Metal Boxes

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FIVE CAPS TO A BOX—RETAIL PRICE 40c IN U. S. A.

A. SCHRADER'S SON, Inc.

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MANY are asking what the new Chrysler Six will look like. ¶ We are not ready to say, except to remind you that a car that is to meet a great public demand, selling to people of varied tastes and interests, cannot be extreme or reflect the whim of a day or a season in design or construction. ¶ There is no doubt that buyers of cars will demand greater value for their money than they have received in the past. This will mean cars of longer life, less eccentricity of design, greater stability in used car values. ¶ These have been the things first in mind in the engineering, design, material and workmanship of the new Chrysler Six. ¶ We believe the public will be so quick to recognize the intrinsic and permanent value of the Chrysler Six that, early in its production, it will come to be looked upon as the best value among sensibly priced automobiles. ¶ Chrysler production starts in July.

CHRYSLER MOTOR COMPANY, ELIZABETH, NEW JERSEY

CHRYSLER sales policy will provide for the establishment of distributors and dealers only as production grows. Parts of the country may remain uncovered for some time to come. When a distributor is established, it will be with the assurance that he can depend upon getting from us a sufficient supply of cars to make his business successful and profitable from the start.

CHRYSLER

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SPARK PLUGS

"THE PLUG THAT SATISFIES"

SAVE Time - Trouble - Gas

Guarantee Every V-D Spark Plug is subjected to individual, final inspection and test and guaranteed perfect as to material and workmanship.
The company stands behind their product and will make satisfactory adjustment in the event any VIKTRY DISC Spark Plug fails to give absolute satisfaction.

Price: 7/8 in., $1.25; 1/2 in., $1.00

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VIKTRY PRODUCTS

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The AKURET OIL GAUGE for FORD CARS

THE OLD WAY
Difficult, Inconvenient and a Loss of Time

THE AKURET WAY
Simple and Effective

Dealers—

The Akuret Oil Gauge prevents the carrying of excess oil, which induces rapid carbonization, or an insufficient supply, causing BURNT BEARINGS. It entirely eliminates the necessity of getting under the FORD to determine the oil supply.

Every Ford owner wants this gauge. Get your supply from your nearest jobber or write us direct for further information.

"Every One Guaranteed"

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AUTOMOBILE owners everywhere are recognizing the superiority of Wire Wheels. This is evidenced by the large quantities of HOUK and HOUSE Wire Wheels that are being sold by our Service Stations—by the surprising number of old cars that are being rejuvenated with Wire Wheel equipment.

Wire Wheel Service Station territory is open to organizations that have, or are willing to install, the equipment necessary for proper servicing. If you can qualify—write for our proposition.

WIRE WHEEL CORPORATION OF AMERICA
(Successor to Houk Manufacturing Co.)
1700 Elmwood Avenue, Buffalo, N. Y.

Direct Factory Branches and Service Stations:

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A set of Houk or House wire wheels consists of five wheels, four inner hubs, four hub caps, hub cap wrench and spoke nipple wrench

HOUK

For over 600 models of 150 makes of cars. Specify make, model and year of car when writing for particulars.

HOUSE

For FORD, CHEVROLET 490 and OVERLAND Model 4. Finished in White, Black, Red, and Cream—color optional.

The Wire Wheel Service Station Sign

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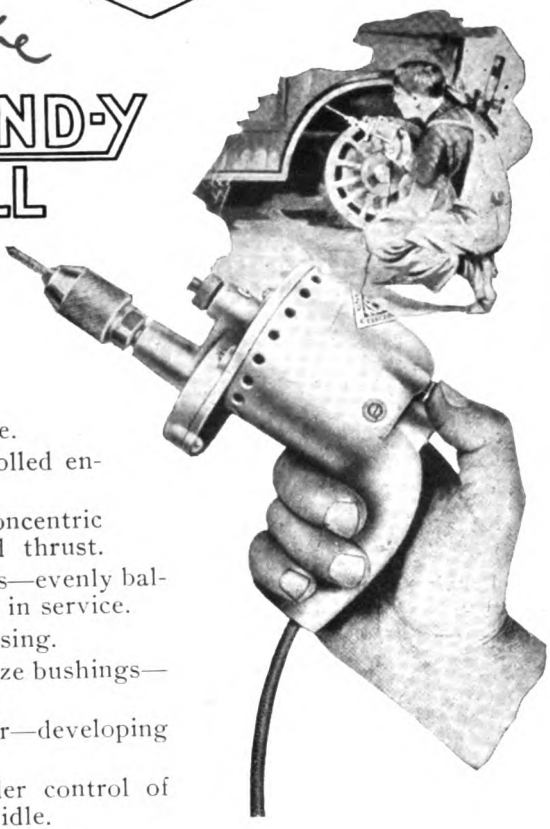
KESCO
ELECTRIC DRILLS

Do it with the

ONE-HAND-Y DRILL



The Lightest—Efficient Electric Drill

Compact and durable.

Operated and controlled entirely by one hand.

Chuck and bit concentric with hand-grip and thrust.

Weight three pounds—evenly balanced in hand when in service.

Pure aluminum housing.

All bearings in bronze bushings—spiral cut gears.

Universal type motor—developing 1/6 H. P.

Switch always under control of thumb—cannot run idle.

Should be in every garage, machine, electric and wood-working shop.

Every mechanic needs one—a labor saving device.

Several users have reported that it has paid for itself in two to three days' use.

Equipped with Goodell-Pratt or Jacobs chuck.

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The One-Hand-Y Drill is distributed exclusively through the Jobbing trade. It is a "best seller" in the mechanical tool line.

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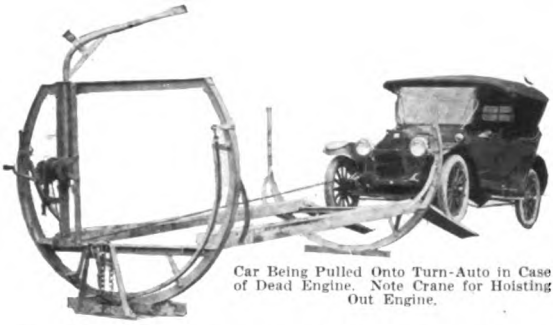
Turn-Auto

What Is a Turn-Auto?



Car Being Pulled Onto Turn-Auto in Case of Dead Engine. Note Crane for Hoisting Out Engine.

THE TURN-AUTO is a steel holder or cradle, which will firmly hold any size car or truck.

It sets anywhere on the ground or floor without bracings or fastenings.

By a turn of the crank the car is rolled over on either side and held at any angle.

The car when rotated occupies only the same space as when standing.

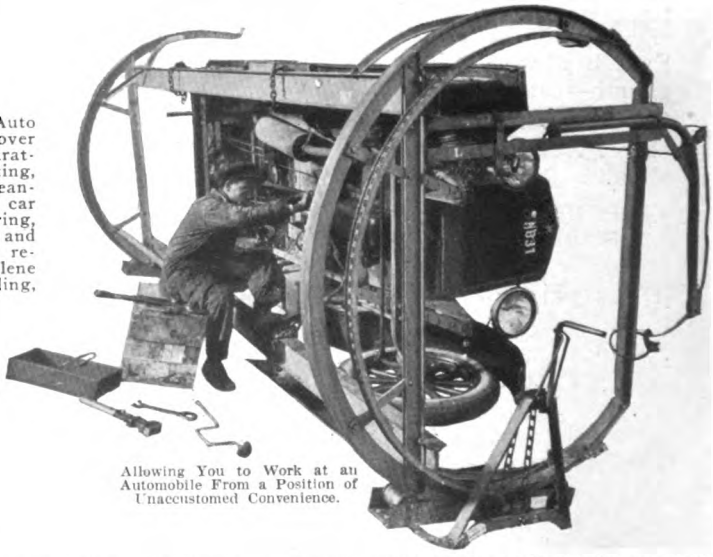
A Word to the Trade

Mr. Repairman, in seven minutes, a car can be placed in the Turn-Auto and rolled over on either side for inspection and repairs.

A few turns of the windlass and you can hoist the engine out and swing it clear of the car.

The front or rear end of the car can be quickly hoisted with our Tandem Jacks and one or both axles and the transmission removed.

The Turn-Auto turns a car over for demonstrating, inspecting, adjusting, cleaning, painting, car body repairing, engine, axle and transmission repairing, acetylene frame welding, etc.



Allowing You to Work at an Automobile From a Position of Unaccustomed Convenience.

TURN-AUTO CORPORATION

149 Broadway, New York City

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Seaco Automobile Fabrics and Threads

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SEACO FABRICS

are of distinctive and superior quality and sell at attractive prices in a competitive market. As exclusive agents we are in a position to be of help to Manufacturers and Body Builders requiring Broadcloths, Velours, Baratheas, Corkscrews, Whipcords, Plushes, Kerseys, Meltons, Velvets, Suedes, etc.

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are made by us at our own mill and are finished to suit the most exacting needs of Automobile Stitching.

SEACO Refers, by Permission, To a Few of the Users of SEACO Products in the Automobile Industry

Auburn Automobile Co.	The Auburn
James Cunningham, Son & Co.	The Cunningham Car
Ford Motor Company	Ford Car
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Perhaps SEACO can be of service to YOU

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Worm Drive Axles *for* Motor Trucks

Built in a new, modern axle plant, conveniently located in Chicago's steel and iron manufacturing district, where every facility for the prompt supply of necessary axle material is at hand.

Truck builders will get dependable axle service from us, coupled with a product which embodies the latest and best engineering practice in rear axles.

IRON MOUNTAIN CO.

927 East Ninety-Fifth Street, Chicago, Illinois

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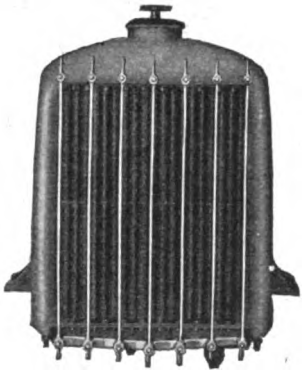
NATIONAL RADIATORS



NATIONAL Zig Zag Radiators are built for pleasure and passenger cars.

They are light in weight and symmetrical in design, adding much to the appearance of any car. Yet that is not all. Their deep air cells and unobstructed water jackets guarantee greater cooling surface and unusual expansion and contraction flexibility.

A NATIONAL Zig Zag Radiator reduces operating costs and will eliminate such winter annoyance as frozen or steaming radiators.

THE service that most motor trucks and tractors are put to, is especially trying on the cooling system.

National Spiral Tube Radiators have been scientifically built to withstand such excessive abuse. Their greater surface exposure of water channels insures them against overheating.

Make sure that your motor truck or tractor is equipped with a National Spiral Tube Radiator.

NATIONAL ZIG ZAG RADIATOR

PRICES

F. O. B. New York.
$28.00 finished in black enamel. $30.00 finished in nickel. Shipping weight complete, 35 pounds.

DEALERS

We are in position now to offer attractive agency propositions. Full information on request.

NATIONAL CAN COMPANY

Detroit **Radiator Division** **Michigan**

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RADIATOR REPAIR CEMENT—See Cement, Radiator Repair

RADIATOR REPAIR STANDS—See Stands, Radiator Repair

RADIATOR SEALING COMPOUNDS—See Cement, Radiator Repair

RADIATOR SHIELDS—See Covers, Radiator

RADIATOR SHUTTERS—See Covers, Metal Radiator

RADIATOR SIGNS—See Monograms, Ornamental Metal

RADIATOR STRAINERS—See Strainers, Radiator and Tank Filler

RADIATOR TEMPERATURE CONTROLLERS FOR FORDS—See Covers, Automatic Radiator

RADIATOR TESTING PLUGS FOR FORDS—See Plugs, Radiator Testing

RADIATOR THERMOMETER LOCKS—See Locks, Radiator Thermometer

RADIATOR THERMOMETERS—See Meters, Water Temperature Indicating

K. & L. Radiator Mfg. Co., 215-17 W. 31st St., Chicago, Ill.

Livingston Radiator Corp., Plainfield, N. J.

Lober Radiator & Mfg. Co.—See Quinn Co.

Lockport Radiator Co., 293 Market St., Lockport, N. Y. "Hercules."

Long Auto Parts Mfg. Co., E. F., 1915-17 Pine St., St. Louis, Mo.

McCord Mfg. Co., Detroit, Mich. (See pages 784 and 785.)

Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y.

Motor Radiator Co., 1239 N. 12th St., Philadelphia, Pa.

Omaha Auto Radiator Mfg. Co., 1819-21 Cuming St., Omaha, Neb.

Perfection—See Ajax Auto & Aero Sheet Metal Co.

Perfex Radiator Co., Flett Ave., Racine, Wis. (See page 789.)

Quinn Co., Nelson J., Toledo, O. (Sole Distributors for Lober Radiator & Mfg. Co., Toledo, O.) (See page 1107.)

Rex Radiator & Mfg. Co., 243 W. 68th St., New York, N. Y.

Rome-Turney Radiator Co., Rome, N. Y. (See page 789.)

Todd Mfg. Co., 12-14 N. 12th St., Minneapolis, Minn.

United States Cartridge Co., Lawrence St., Lowell, Mass.

White & Steidle, P. O. Box 173, Cincinnati, O. (See page 801.)

Wright Cooler & Hood Mfg. Co., 4868-70 N. Clark St., Chicago, Ill.

Zig Zag—See Auto Radiator Mfg. Co.

RADIATORS, DUMMY, FOR FORDS—See Hoods, Radiator

RADIATORS, Aircraft Water Cooling

Ajax Auto & Aero Sheet Metal Co., 419 W. 47th St., New York, N. Y. "Perfection." (See page 803.)

Ansted Co., 600 W. 57th St., New York, N. Y. (See pages 781 and 782.)

Auto Radiator Mfg. Co., 1712 S. Michigan Ave., Chicago, Ill. "Zig Zag."

B & W Mfg. Co., 5235 Ravenswood Ave., Chicago, Ill.

Bowerbank Expansion Radiator Co., 1012-14 S. Los Angeles St., Los Angeles, Cal.

Bush Mfg. Co., Hartford, Conn. (See page 797.)

Candler Radiator Co., 1084-86 Jefferson Ave., E. Detroit, Mich. (See page 841.)

Curtiss Aeroplane & Motor Corp., Garden City, N. Y.

English & Mersick Co., New Haven, Conn. (See pages 623 and 783.)

Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for McCord Radiators.) (See page 125.)

Fedders Mfg. Co., Buffalo, N. Y. (See page 779.)

Flexo Mfg. Co., 1312-20 E. 12th St., Los Angeles, Cal.

G & O Mfg. Co., New Haven, Conn. (See page 789.)

Gordon Radiator Co., 143d St. & Wales Ave., New York, N. Y. (See page 789.)

Harrison Radiator Corp., Washburn & Walnut Sts., Lockport, N. Y.

Hercules—See Lockport Radiator Co.

Ideal Sheet Metal Works, 213 N. Morgan St., Chicago, Ill.

Jamestown Car Parts Mfg. Co., Allen St. Extension, Jamestown, N. Y.

RADIATORS, Tractor Water Cooling

Ajax Auto & Aero Sheet Metal Co., 419 W. 47th St., New York, N. Y. "Perfection." (See page 803.)

Auto Radiator Mfg. Co., 1712 S. Michigan Ave., Chicago, Ill. "Zig-Zag."

B & W Mfg. Co., 5235 Ravenswood Ave., Chicago, Ill.

Bowerbank Expansion Radiator Co., 1012-14 S. Los Angeles St., Los Angeles, Cal.

Bremer Mfg. Co., Forquer & Canal Sts., Chicago, Ill.

Bush Mfg. Co., Hartford, Conn. (See page 797.)

Candler Radiator Co., 1084-86 Jefferson Ave., E. Detroit, Mich. (See page 841.)

Chicago Mfg. Co., 1458-64 Michigan Ave., Chicago, Ill.

Curran-Detroit Radiator Co., 1984 W. Lafayette Blvd., Detroit, Mich. (See page 797.)

English & Mersick Co., New Haven, Conn. (See pages 623 and 783.)

Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for McCord Radiators.) (See page 125.)

Faber, Schneider Mfg. Co., 2317-27 S. Wabash Ave., Chicago, Ill.

Fedders Mfg. Co., Buffalo, N. Y. (See page 779.)

Flexo Mfg. Co., 1312-20 E. 12th St., Los Angeles, Cal.

G & O Mfg. Co., New Haven, Conn. (See page 789.)

Gordon Radiator Co., 143d St. & Wales Ave., New York, N. Y. (See page 789.)

Hercules—See Lockport Radiator Co.

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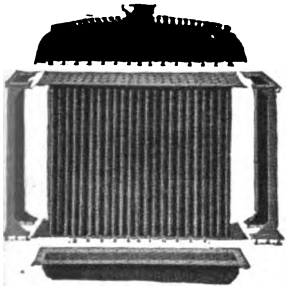
There's a Type of Fedders Radiator for Every Purpose

Here are Three



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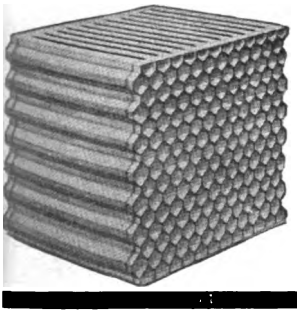
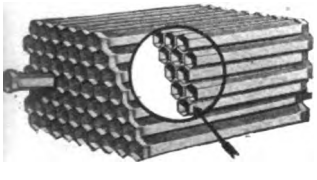


DIAMOND CORE—for Passenger cars, Trucks and Tractors. The original of the cellular or "honeycomb" types of radiators; has large water spaces and cooling area; light in weight and sturdy in construction. Its delicate lines and attractive design add greatly to the vehicle's appearance. Widely used on autos and tractors—and on more high grade trucks than all other makes and types of radiators combined.



GENUINE HONEYCOMB—for Autos, Trucks, Tractors, Airplanes. The original and only radiator of its kind. Built up of individual cell-like tubes—hexagon or square—joined at their expanded ends to form water spaces on all sides of each tube. Practically every bit of metal has air on one side and water on the other. Uniform water spaces, non-clogging. Flexible core, leak-proof construction. Withstands freezing without injury. Easy for a novice to repair.

FEDDERS MFG. CO.
INCORPORATED
BUFFALO, N. Y.

FEDDERS
AUTOMOTIVE RADIATORS

Used by America's Foremost Car Builders—Year after Year

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RADIATORS, Tractor Water Cooling (Continued)

Ideal Sheet Metal Works, 213 N. Morgan St., Chicago, Ill.

K. & L. Radiator Mfg. Co., 215-17 W. 31st St., Chicago, Ill.

Kells Mfg. Co., W. J., 521-25 W. 45th St., New York, N. Y.

Kleber-Sherman Mfg. Co., 2807 S. Michigan Ave., Chicago, Ill.

Livingston Radiator Corp., Plainfield, N. J.

Lober Radiator & Mfg. Co.—See Quinn Co.

Lockport Radiator Co., 293 Market St., Lockport, N. Y. "Hercules."

Long Auto Parts Mfg. Co., E. F., 1915-17 Pine St., St. Louis, Mo.

Long Mfg. Co., Detroit, Mich. (See page 787.)

McCord Mfg. Co., Detroit, Mich. (See pages 784 and 785.)

Main Auto Radiator Works, 619 Tenth Ave., New York, N. Y.

Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y.

Medway Sales Corp., Racine, Wis. (Sole Distributors for Splitex Radiator Co., Racine, Wis.) (See page 377.)

Modine Mfg. Co., Racine, Wis. "Spirex."

National Can Co., Detroit, Mich. "Zig-Zag." (See page 777.)

Zig-Zag—See National Can Co.

Omaha Auto Radiator Mfg. Co., 1819-21 Cuming St., Omaha, Neb.

Perfection—See Ajax Auto & Aero Sheet Metal Co.

Perfex Radiator Co., Flett Ave., Racine, Wis. (See page 789.)

Quinn Co., Nelson J., Toledo, O. (Sole Distributors for Lober Radiator & Mfg. Co., Toledo, O. (See page 1107.)

Rex Radiator & Mfg. Co., 243 W. 68th St., New York, N. Y.

Rome-Turney Radiator Co., Rome, N. Y. (See page 789.)

S-J—See Shotwell-Johnson.

Shotwell-Johnson, Minneapolis, Minn. "S-J." (See page 1115.)

Spirex—See Modine Mfg. Co.

Splitex Radiator Co.—See Medway Sales Corp.

Standard Radiator Co., Main St., Springville, N. Y.

Todd Mfg. Co., 1214 N. 12th St., Minneapolis, Minn.

United States Cartridge Co., Lawrence St., Lowell, Mass.

Wheeler Radiator & Mfg. Co., 1637-39 Collamer Ave., Cleveland, O. (See page 783.)

White & Steidle, P. O. Box 173, Cincinnati, O. (See page 801.)

Wright Cooler & Hood Mfg. Co., 4868-70 N. Clark St., Chicago, Ill.

Zig-Zag—See National Can Co.

RADIATORS, Water Cooling

Ajax Auto & Aero Sheet Metal Co., 419 W. 47th St., New York, N. Y. "Perfection." (See page 803.)

Ansted Co., 600 W. 57th St., New York, N. Y. (See pages 781 and 782.)

Auto Radiator Mfg. Co., 1712 S. Michigan Ave., Chicago, Ill. "Flexo."

Automotive Sheet Metal Co., Factory St. & Grand Trunk R. R., Kalamazoo, Mich. "Maco."

B & W Mfg. Co., 5235 Ravenswood Av cago, Ill.

Bowerbank Expansion Radiator Co., 1012 Los Angeles St., Los Angeles, Cal.

Bremer Mfg. Co., Forquer & Canal Sts. cago, Ill.

Bush Mfg. Co., Hartford, Conn. (See page 797.)

C. A. S. Radiator Co.—See C. A. S. Engi ing Co.

C. A. S. Engineering Co., 4210 Wood Ave., Detroit, Mich. (Sole Distributor C. A. S. Radiator Co., Jackson, Mich.)

Candler Radiator Co., 1084-86 Jeff Ave., E. Detroit, Mich. (See page 8

Central Service Corp., 1607 Merch Bank Bldg., Indianapolis, Ind. (Representative.) (See page 345.)

Chicago Mfg. Co., 1458-64 Michigan Ave., cago, Ill.

Curran-Detroit Radiator Co., 196 Lafayette Blvd., Detroit, Mich. (See page 797.)

English & Mersick Co., New Haven, ((See pages 623 and 783.)

Evans-Lawrie Co., 708 Beacon St., ton, Mass. (Eastern Distributor McCord Radiators.) (See page 12

Faber, Schneider Mfg. Co., 2317-27 S. bash Ave., Chicago, Ill.

Fedders Mfg. Co., Buffalo, N. Y. (See page 779.)

Federal Radiator Co., Zanesville, O.

Flexo—See Auto Radiator Mfg. Co.

Flexo Mfg. Co., 1312-20 E. 12th St., Le geles, Cal.

G & O Mfg. Co., New Haven, Conn. (See page 789.)

Gordon Radiator Co., 143d St. & Ave., New York, N. Y. (See page

Harrison Radiator Corp., Washburn & nut Sts., Lockport, N. Y.

Hercules—See Lockport Radiator Co.

Ideal Sheet Metal Works, 213 N. Morg Chicago, Ill.

Indiana Lamp Co., 20th St. & Pike, Connersville, Ind. (See page 308.)

Jamestown Car Parts Mfg. Co., Allen tension, Jamestown, N. Y.

K. & L. Radiator Mfg. Co., 215-17 St., Chicago, Ill.

Kells Mfg. Co., W. J., 521-25 W. 45 New York, N. Y.

Kleber-Sherman Mfg. Co., 2807 S. M Ave., Chicago, Ill.

Livingston Radiator Corp., Plainfield,

Lober Radiator & Mfg. Co.—See Quinn

Lockport Radiator Co., 293 Market St., port, N. Y. "Hercules."

Long Auto Parts Mfg. Co., E. F., 1915-1 St., St. Louis, Mo.

Long Mfg. Co., Detroit, Mich. (See page 787.)

McCord Mfg. Co., Detroit, Mich. (See pages 784 and 785.)

McKinnon Dash Co., Buffalo, N. Y. (See page 831.)

Maco—See Automotive Sheet Metal C

Marlin-Rockwell Corp., 347 Madison New York, N. Y.

Martin Metal Mfg. Co., Wichita, Kans.

Medway Sales Corp., Racine, Wis. Distributors for Splitex Radiator Racine, Wis.) (See page 377.)

Modine Mfg. Co., Racine, Wis. "Spirex

National Can Co., Detroit, Mich. Zag." (See page 777.)

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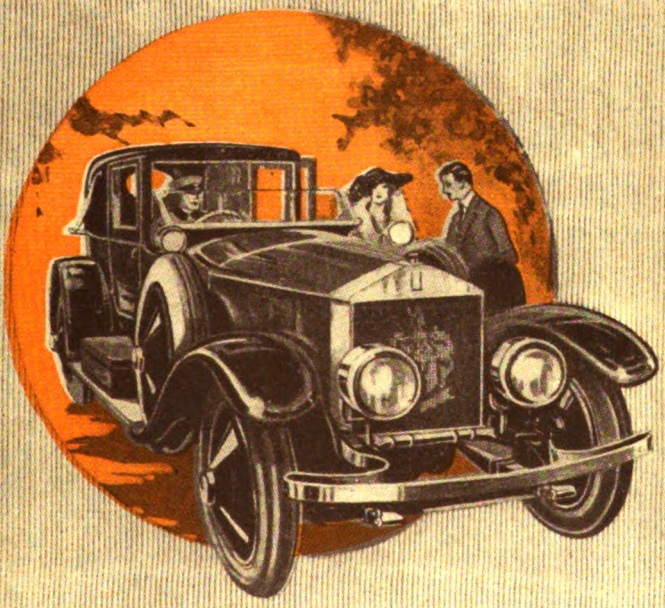
ANSTED
AUTOMOBILE PARTS

A QUALITY PRODUCT



THE ANSTED COMPANY, INC.

MANUFACTURERS OF HYDRA TUBE RADIATORS FOR MOTOR CARS

600 West 57th Street, New York.

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ANSTED RADIATORS

A Motor Car is Known by Its Radiator

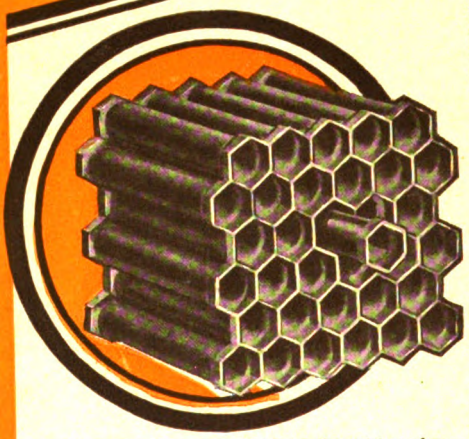
The Ansted Company, an organization devoted to the production of super-quality radiators for fine cars, has preserved its individuality and made a permanent place for itself in the industry by keeping far ahead in the development of many exclusive features in fine radiators.

Among Exclusive Ansted developments are listed:

- Genuine square cellular Spherical face cores.
- Genuine Hydr-A-tube seamless front semi-spherical face cores.
- Genuine square cellular Mercedes type seamless front "V" shape cores.
- Genuine square cellular machine beveled "wire type" "V" shape cores.
- Genuine Seamless individual Venturi tube cores.

The "Watermark" process by which a manufacturer's trade-mark, or a monogram or crest, may be **built into** a radiator is an exclusive Ansted development which will meet with instant favor.

The pace in the automotive industry is altogether too fast for any buyer to make a habit of a source of supply, and when, as the culmination of fifteen years of specialization, there becomes available at moderate cost, a radiator which may be **guaranteed for the life of the car**, the manufacturer who would keep faith with his sales force and his trade, owes it to himself to investigate so refined a product.



The exclusive distributing franchise by which we offer genuine EXTRUDED seamless individual tube cores, makes available a product of phenomenal strength and durability, and this combined with the latest scientific development in giving the tubes a Venturi diamond shape cross section makes for the ultimate in thermal efficiency. The tubes are manufactured by The United States Cartridge Company of Lowell, Mass. of finest grade pure Lake Copper, EXTRUDED (not drawn) Seamless, Uniform Removable.

THE ANSTED CO., Inc.
600 West 57th St.
New York, N. Y.

US

A QUALITY PRODUCT

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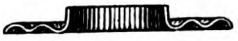
W E&M W

"Made Well—Just a Bit Better than Necessary"

At Last — The Radiator for Trucks



A COOLING section of the type here shown has become standardized among many truck manufacturers because of features which make for improved radiation and greater convenience.

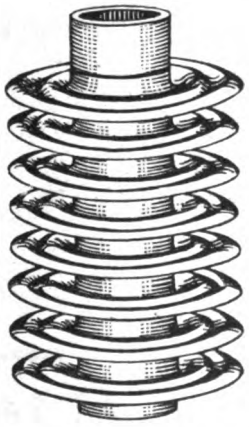
Consider carefully the following advantages:

Collar on fin insures complete metallic union with tube, and holds fin securely in place.

Tube driven through fin, giving the closest possible fit.

Damaged fins may easily be restored to shape and usefulness without being loosened from tube.

Tube is of seamless copper, 3-8 inch O. D., .025 wall thickness. And header plates are low brass or copper, of .050 thickness.



The cuts clearly show its distinctive features

Two supply sources, insuring delivery and interchangeable product. Your drawings will receive prompt attention.

AFFILIATED

The English & Mersick Co.
Radiator Dept.
New Haven, Connecticut

The Wheeler Radiator & Mfg. Co.
1637-39 Collamer Avenue
E. Cleveland, Ohio

W E&M

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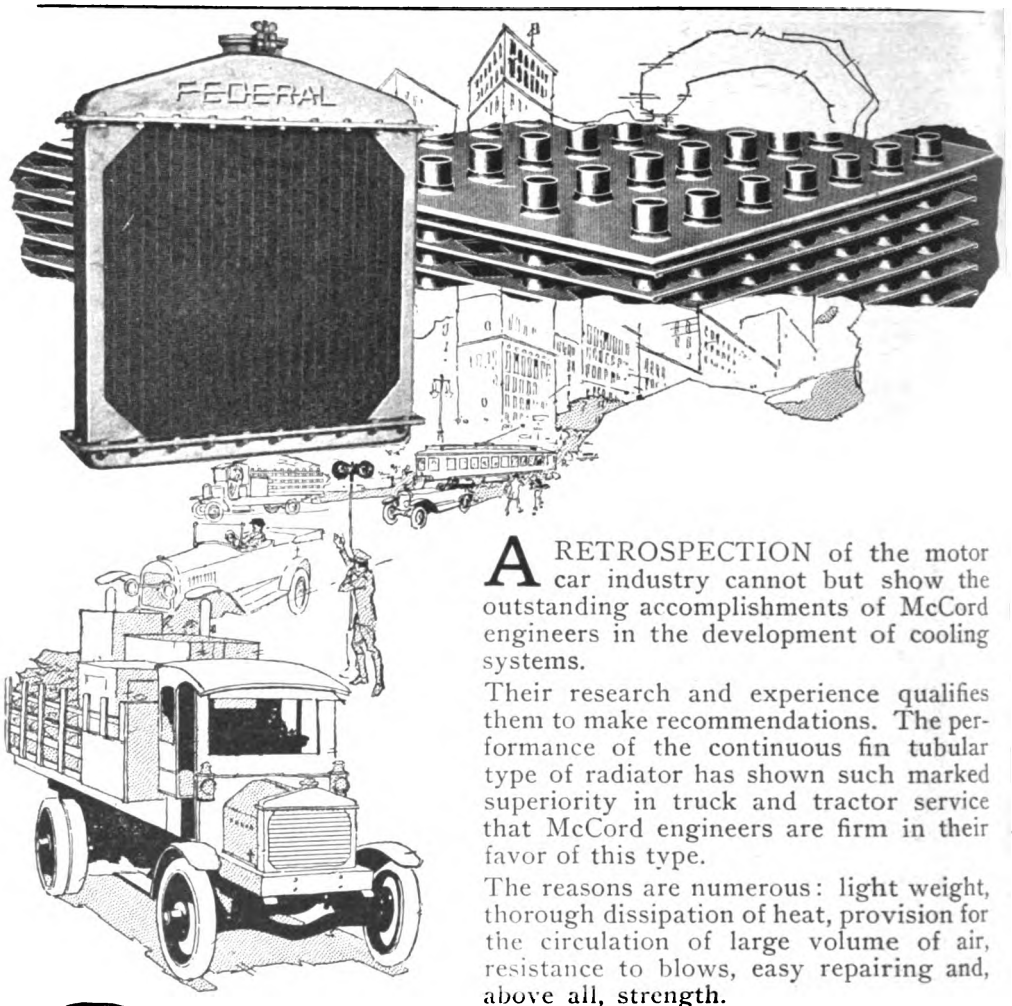

A RETROSPECTION of the motor car industry cannot but show the outstanding accomplishments of McCord engineers in the development of cooling systems.

Their research and experience qualifies them to make recommendations. The performance of the continuous fin tubular type of radiator has shown such marked superiority in truck and tractor service that McCord engineers are firm in their favor of this type.

The reasons are numerous: light weight, thorough dissipation of heat, provision for the circulation of large volume of air, resistance to blows, easy repairing and, above all, strength.

In the great McCord plant are manufactured all types of cellular and tubular radiators. Years of experience have given this company, the largest radiator makers in the industry, a standing which permits it to authentically make recommendations. Promoting the use of the continuous fin tubular type of core is done, therefore, to insure maximum results.

The framework of the modern skyscraper and the continuous fin tubular core are similar. Strength and rigidity result from the perfect system of bracing.

McCORD MANUFACTURING COMPANY, Inc.
Detroit, Michigan
Manufacturers of
McCord Force-Feed Lubricators and McCord Gaskets
SERVICE STATIONS:
New York: 191 Academy St., Long Island City
Chicago: 1512 South Michigan Ave.

McCord
RADIATORS

Please mention The Automobile Trade Directory

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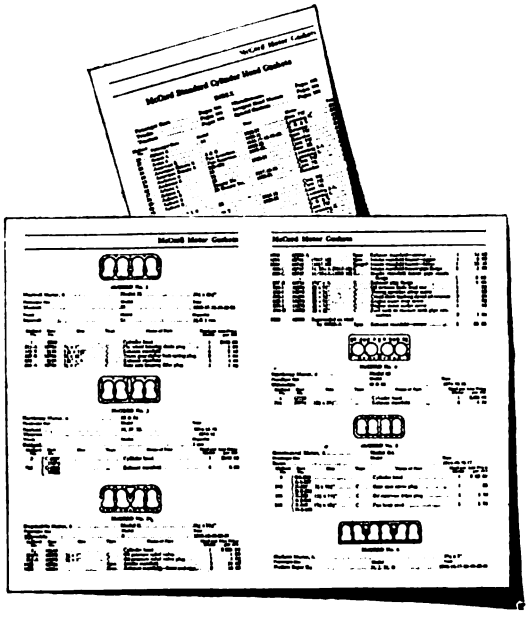
Partial List of
McCORD GASKETS FOR PASSENGER CARS

Gasket No.	Passenger Cars	Model
10	Abbott 6	44
15	American 6	1916-17-18
10	Anderson 6	200-A
68	Anderson 6	400-C
30	Auburn 4	25
16	Auburn 6	(Continental 7-W)
15	Auburn 6	(Rutenber)
16	Baker R. & L. 6	25
24	Bell 4	16
28	Bell 6	18
27	Bush 4	Super Four
45	Briscoe 4	24 (Water Outlet)
27	Buick 4	
27	Bush 4	
10	Bush 6	(Continental 7-W)
6	Cadillac 8	37
56	Chalmers 6	35-C and 36-B
79	Chalmers 6	35-C "Hot Spot"
7	Chevrolet 4	4-90
7	Chevrolet 4	Baby Grand
33	Chevrolet 6	D-4 and D-5
45	Cole 8	308
16	Colonial 6	35
10	Columbia 6	(Continental 7-W)
37	Commonwealth 4	
10	Continental Motor 6	7-W
14	Continental Motor 6	D
68	Continental Motor 6	7-R
10	Crawford 6	40
37	Crow Elkhart 4	1916-17
15	Crow Elkhart 6	
70	Davis 4	
71	Davis 4	SD
10	Davis 6	46(Continental7-W)
50	Detroiter 6	All Models
30	Dixie Flyer 4	
41	Dodge 4	All Models
31	Dort 4	4 and 5, 1915
30	Dort 4	5-A, 6 & 9, 1916-17
37	Dort 4	8 & 11, 1918-19
36	Economy 4	36
10	Economy 6	45 (Continental 7-W)
37	Elcar 4	D-4
10	Elcar 6	D-6 (Continental 7-W)
18	Elgin 6	(Falls)
10	Empire 6	70(Continental7-W)
15	Empire 6	(Rutenber)
36	Erie 4	
44	Essex 4	A 1919
34	Ford 4	T (Copper)
35	Ford 4	T (Tin inlay)
15	Geronimo 6	
15	Gheut 6	45
15	Gilde 6	40
64	Grant 4	M
18	Grant 6	K and G, 1917-18
36	Hackett 4	
36	Hatfield 4	
18	Halladay 6	1918 (Falls)
15	Halladay 6	1919 (Rutenber)
10	Harvard 6	A(Continental 7-W)
30	Harvard 4	20
64	Hamilton 4	
10	Hollier 6	206 (Continental 7-W)
6	Hudson 6	Super-Six
3	Hupmobile 4	R 1918
54	Hupmobile	32, Valve Plate
45	Jackson 8	(Northway)
15	Jeffery 6	Chesterfield
68	Jordan 6	M
10	Kline 6	38(Continental7-W)
68	Kline 6	35
36	Lexel 4	35
29	LaSal Motor 4	
41	L. P. C. 6	(Lewis)
10	Lexington 6	(Continental 7-W)
31	Lozier 4	84
15	Madison 6	1916-17-18
18	Malbohm 6	B (Falls)
15	Marion-Handley 6	A
42	Marmon 6	34
32	Maxwell 4	1914-15
1	Maxwell 4	1916-17-18
9	Metz 4	All Models
15	Metz 6	Master Six
10	Monitor 6	M (Continental-7-W)
72	Monroe 4	M-2
30	Monroe 4	M-3
16	Moon 6	48,1916-17(Continental7-W)
68	Moon 6	48 (Victory)
13	Moon 6	36 and 38
36	Moore 4	36-C
15	Moore 6	All Models
37	Napoleon 4	30
10	Napoleon 6	(Continental 7-W)
68	Nash 6	681-682-683-684-685
90	Nelson 4	D
10	Noma 6	(Continental 7-W)
37	Norwalk 4	
37	Oakland 6	32, 32-B, 34, 34-B
2	Oakland 4	36, 37 and 38
45	Oakland 8	60
4	Oldsmobile 4	42 and 43
37	Oldsmobile 6	37
14	Overland 6	82, 1915-16
10	Overland 6	85, 1916-17-18
38	Overland 4	75 and 90
39	Overland 4	83 and 85
72	Overland 4	4, 1919
10	Packard 12	2-25, 2-35 2nd series
40	Packard 12	3-25, 3-35, 3rd series
14	Paige 6	46, 1915-16
15	Paige 6	39, 1917-18
78	Paige 6	1920
15	Pan American 6	All Models
10	Pathfinder 6	(Continental 7-W)
10	Peerless 6	45 (Continental 7-W)
36	Penny 4	18
10	Penny 6	AllModels(Continental7-W)
27	Piedmont 4	30
10	Piedmont 6	40(Continental7-W)
46	Pierce-Arrow 6	38, 24 Valve 1920
26	Pilgrim 4	
36	Princess 4	All Models
36	Pullman 4	1916-17-18
68	Rex 6	1920
5	Reeves 4	All Models
13	Reeves 6	All Models
15	Sawyer 6	All Models
10	Sayers 6	AllModels(Continental7-W)
20	Scripps-Booth 4	1915-16-17
37	Scripps-Booth 6	20
7	Scripps-Booth 4	G-1918
30	Sears 4	37
30	Spitzer 4	1915
43	Studebaker Big 6	Series 19 and 20
69	Studebaker Light 6	Series 20
10	Sterling 6	(Continental 7-W)
36	Thomas 4	
10	Thoroughbred 6	All Models
27	Velie 4	D-1
10	Velie 6	39(Continental7-W)
3	Westcott 4	1914-15
10	Westcott 6	41, 1916 (Continental 7-W)
68	Westcott 6	Lighter Six



The new McCord catalog, just off the press contains 72 pages; 233 illustrations; and lists all copper asbestos gaskets for the more popular motors.

Gasket Guide

A complete listing of gaskets—cylinder head, round and special, for—

245 Passenger Cars
145 Trucks
79 Tractors
17 Farm Lights, etc.

The listing is arranged for quick reference with full description and list prices. For free copy, send your address and name to Gasket Division, Wyandotte, Michigan.

Order McCords by Stock Number Through Your Jobber

McCORD MANUFACTURING CO., Inc.,
DETROIT, MICHIGAN

East. Sales Branch, 189-191 Academy St., Long Island City, N.Y.

Manufacturers of McCord Automobile Radiators and McCord Force-Feed Lubricators

McCord GASKETS

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RADIATORS, Water Cooling (Continued)

Omaha Auto Radiator Mfg. Co., 1819-21 Cuming St., Omaha, Neb.

Perfection—See Ajax Auto & Aero Sheet Metal Co.

Perfex Radiator Co., Flett Ave., Racine, Wis. (See page 789.)

Quinn Co., Nelson J., Toledo, O. (Sole Distributors for Lober Radiator & Mfg. Co., Toledo, O.) (See page 1107.)

Rex Radiator & Mfg. Co., 243 W. 63th St., New York, N. Y.

Rome-Turney Radiator Co., Rome, N. Y. (See page 789.)

S-J.—See Shotwell-Johnson.

Sheppard Mfg. Co., 1331 W. Jackson Blvd., Chicago, Ill.

Shotwell-Johnson, Minneapolis, Minn. "S-J." (See page 1115.)

Sparks-Withington Co., Jackson, Mich.

Spirex—See Modine Mfg. Co.

Splitex Radiator Co.—See Medway Sales Corp.

Standard Auto Radiator Co., 244 W. 53rd St., New York, N. Y.

Standard Radiator Co., Main St., Springville, N. Y.

Todd Mfg. Co., 12-14 N. 12th St., Minneapolis, Minn.

United Radiator Co., 150 N. Broad St., Philadelphia, Pa.

United States Cartridge Co., Lawrence St., Lowell, Mass.

Wabash Auto Radiator Mfg. Co., 1117-23 S. Wabash Ave., Chicago, Ill.

Wheeler Radiator & Mfg. Co., 1637-39 Collamer Ave., Cleveland, O. (See page 783.)

White & Steidle, P. O. Box 173, Cincinnati, O. (See page 801.)

Wright Cooler & Hood Mfg. Co., 4363-70 N. Clark St., Chicago, Ill.

Zig-Zag—See National Can Co.

RADIATORS, Water Cooling, for Fords (Regular and V Type)

Ajax Auto & Aero Sheet Metal Co., 419 W. 47th St., New York, N. Y. "Perfection." (See page 803.)

Auto Radiator Mfg. Co., 1712 S. Michigan Ave., Chicago, Ill. "Zig Zag." "Ex-L."

Bowerbank Expansion Radiator Co., 1012-14 S. Los Angeles St., Los Angeles, Cal.

Bulldog—See Livingston Radiator Corp.

Candler Radiator Co., 1084-86 Jefferson Ave., E. Detroit, Mich. (See page 841.)

Columbia Auto Radiator Co., 902-06 Race St., Cincinnati, O.

Corcoran Mfg. Co., Section & Foraker Aves., (Norwood), Cincinnati, O. "Peerless."

Curran-Detroit Radiator Co., 1984 W. Lafayette Blvd., Detroit, Mich. (See page 797.)

Doric—See Motor Truck Radiator & Mfg. Co.

El Arco Radiator Co., West End Ave. & 64th St., New York, N. Y.

Emco—See Motor Truck Radiator & Mfg. Co.

Ex-L—See Auto Radiator Mfg. Co.

Faber, Schneider Mfg. Co., 2317-27 S. Wabash Ave., Chicago, Ill.

Fedders Mfg. Co., Buffalo, N. Y. (See page 779.)

Flexo Mfg. Co., 1312-20 E. 12th St., Los Angeles, Cal.

G & G Mfg. Co., New Haven, Conn. (See page 789.)

Gordon Radiator Co., 143d St. & Wales Ave., New York, N. Y. (See page 789.)

Hercules—See Lockport Radiator Co.

Ideal Sheet Metal Works, 213 N. Morgan St., Chicago, Ill.

Jackson Auto Radiator Works, 664-68 Washington Blvd., Chicago, Ill.

Jaffe Radiator Co., 14 E. Jackson Blvd., Chicago, Ill. (See page 1246.)

Jamestown Car Parts Mfg. Co., Allen St. Extension, Jamestown, N. Y.

K. & L. Radiator Mfg. Co., 215-17 W. 31st St., Chicago, Ill.

Kurtzner Radiator Co., H., 3103 Euclid Ave., Cleveland, O.

Livingston Radiator Corp., Plainfield, N. J. "Bulldog."

Lober Radiator & Mfg. Co.—See Quinn Co.

Lockport Radiator Co., 293 Market St., Lockport, N. Y. "Hercules."

Long Auto Parts Mfg. Co., E. F., 1915-17 Pine St., St. Louis, Mo.

McKinnon Dash Co., Buffalo, N. Y. (See page 831.)

Main Auto Radiator Works, 619 Tenth Ave., New York, N. Y.

Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y.

Modine Mfg. Co.—See Zinke Co.

Motor Truck Radiator & Mfg. Co., 255 W. 58th St., New York, N. Y. "Emco." "Doric."

National Can Co., Detroit, Mich. "Zig-Zag." (See page 777.)

Omaha Auto Radiator Mfg. Co., 1819-21 Cuming St., Omaha, Neb.

Peerless—See Corcoran Mfg. Co.

Perfection—See Ajax Auto & Aero Sheet Metal Co.

Perfex Radiator Co., Flett Ave., Racine, Wis. (See page 789.)

Quinn Co., Nelson J., Toledo, O. (Sole Distributors for Lober Radiator & Mfg. Co., Toledo, O.) (See page 1107.)

Rex Radiator & Mfg. Co., 243 W. 63th St., New York, N. Y.

Rome-Turney Radiator Co., Rome, N. Y. (See page 789.)

S-J.—See Shotwell-Johnson.

Sheppard Mfg. Co., 1331 W. Jackson Blvd., Chicago, Ill.

Shotwell-Johnson, Minneapolis, Minn. "S. J." (See page 1115.)

Spirex—See Zinke Co.

Standard Radiator Co., Main St., Springville, N. Y.

Superford—See Superior Lamp Mfg. Co.

Superior Lamp Mfg. Co., 148-50 W. 52d St., New York, N. Y. "Superford."

Todd Mfg. Co., 12-14 N. 12th St., Minneapolis, Minn.

Wabash Auto Radiator Mfg. Co., 1117-23 S. Wabash Ave., Chicago, Ill.

Waterbury Auto Radiator Co., 453 W. Main St., Waterbury, Conn.

White & Steidle, P. O. Box 173, Cincinnati, O. (See page 801.)

Witte Auto Radiator Corp., 2237 Hampden Ave., St. Paul, Minn.

Wright Cooler & Hood Mfg. Co., 4363-70 N. Clark St., Chicago, Ill.

Zig Zag—See Auto Radiator Mfg. Co.

Zig-Zag—See National Can Co.

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Modine Mfg. Co., Racine, Wis. "Spirex.") (See page 312.)

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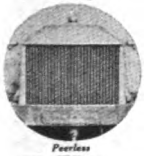
LONG COOLING SYSTEMS

Every Long Cooling System is scientifically adapted to the particular engine which it serves, thereby assuring the maximum efficiency.

Duplex

Hall

Atterbury


Peerless

Indiana

Standard

Columbia

International

Oakland

Denby

The Kinship of Years and Efficiency

In the span of a human life, **18 years** are but the attainment of youth, but "18 years" when associated with an institution of foremost rank in the **automotive** industry—this titanic prodigy of commerce—signify the purposefulness and fullness of maturity, the wisdom and resourcefulness of ripened knowledge and experience; the enthronement of an **ideal.**

Such are our years; these are their fulfillment—strength combined with judgment; fitness united with deliberation; desire associated with capability; success expressive of **merit.**

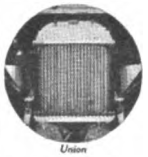
And these — in unstinted measure — are at your service.

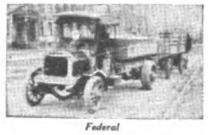
NO ENGINE CAN BE MORE EFFICIENT THAN ITS COOLING SYSTEM. The Long Cooling system guarantees the accomplishment of maximum efficiency at minimum cost.

The recognized Standard for Motor Cars, Motor Trucks and Tractors

LONG Mfg. Co., Detroit, Mich.
Pioneer Makers of Cooling Systems for Gasoline Engines

Oneida


Union


Federal

Armleder

Acme

Grauss-Bernstein

Commerce

Samson

Service

Four Wheel Drive

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RADIATORS, WATER COOLING AIRCRAFT—See Radiators, Aircraft Water Cooling

RADIATORS, WATER COOLING TRACTOR—See Radiators, Tractor Water Cooling

RADIUS ROD CUSHIONS FOR FORDS—See Cushions, Radius Rod

RADIUS ROD SILENCERS FOR FORDS—See Anti-Rattlers, Radius Rod

RADIUS RODS FOR FORDS—See Rods, Radius

RAGS, WIPING—See Wipers

RAILS, COAT—See Rails, Robe or Coat

RAILS, FOOT—See Rests or Rails, Foot

RAILS, Robe or Coat

(Metal rails or leather or fabric straps for attaching to back of front seats to hold robes or coats)

Aetna Brass & Bronze Co., 1631-35 E. 55th St., Cleveland, O.

Allen Fire Department Supply Co., Providence, R. I.

American Brass Novelty Co., Grand Haven, Mich.

Amesbury Brass & Foundry Co., Amesbury, Mass.

Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. "Utility." (See page 81.)

Attwood Brass Works, Grand Rapids, Mich. (See page 1195.)

Badger Mfg. Corp., Milwaukee, Wis. (See page 173.)

Bantlin Co., Julius J., Cincinnati, O. (See page 505.)

Brocksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.

Capitol Brass Works, 2306 Franklin St., Detroit, Mich.

Carter Co., George R., Connersville, Ind.

Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O.

Columbus Brass Co., 540 Dublin Ave., Columbus, O.

Cowles & Co., C., New Haven, Conn. (See page 651.)

Cox Brass Mfg. Co., Albany, N. Y. (See page 261.)

Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.

English & Mersick Co., New Haven, Conn. (See pages 623 and 783.)

Enterprise Brass & Plating Co., Sixth & Baymiller Sts., Cincinnati, O.

Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 174 and 175.)

Highton & Sons Co., Wm. Nashua, N. H.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Jonah & George, Little's Ct., Merrimac, Mass.

Keeler Brass Co., 251-71 Godfrey Ave., Grand Rapids, Mich.

Leather Parts Co., 1619-21 Prospect St., Indianapolis, Ind.

Meyer Scale & Hardware Co., 328 Adams St., Newark, N. J.

Moline Iron Works, Moline, Ill. (See page 601.)

Monarch Carriage Goods Co., Cincinnati, O. (See page 407.)

Neidhardt & Co., C., 31 N. Water St., Rochester, N. Y.

O'Brien Mfg. Co., Joseph F., 391 Broadway, New York, N. Y.

Pfau Mfg. Co., Cincinnati, O.

Rostand Mfg. Co., Milford, Conn.

Schlegel Mfg. Co., 277 N. Goodman St., Rochester, N. Y.

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.

Sterling—See Auto Accessories Mfg. Co.

Sutherland Co., F. L., 139 Beaubien St., Detroit, Mich. (See page 803.)

Utility—See Armand Machine Works.

Wagner Mfg. Co., E. R., North Milwaukee, Wis. (See page 905.)

Wakefield Sales Co., Trempealeau, Wis.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

White Mfg. Co., 155 Cannon St., Bridgeport, Conn.

Whitehouse Mfg. Co., 42 Elm St., Newark, N. J. (See page 637.)

RAILS, Robe or Coat, for Fords

(Metal rails or leather or fabric straps for attaching to back of front seats to hold robes or coats)

Attwood Brass Works, Grand Rapids, Mich. (See page 1195.)

Brocksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.

Dependable—See Gahm-McCormick Co.

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.

Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.

Gahm-McCormick Co., 906 E. Main St., Streator, Ill. "Dependable." (See page 1139.)

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 174 and 175.)

Humboldt—See Republic Auto Parts Co.

Ideal Brass Works, 560 N. Elder Ave., Indianapolis, Ind.

Monarch Carriage Goods Co., Cincinnati, O. (See page 407.)

Proos Mfg. Co., Grand Rapids, Mich. (See page 567.)

Republic Auto Parts Co., 31-35 Tenth St., Long Island City, N. Y. "Humboldt."

Wakefield Sales Co., Trempeleau, Wis.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

RAIN COATS—See Clothing, Motorists'

RAIN SHIELDS—See Visors and Rain Shield, Top; also Shields, Sun and Rain

RAISING SKIDS—See Skids, Car Raising

RASPS AND FILES—See Files and Rasps

RATCHET DRILLS—See Drills, Ratchet

RATCHET PEDALS—See Pedals, Horn and Cut-out

RATCHET PINS FOR FORDS—See Pins, Crank Ratchet

RAWHIDE GEARS—See Gears and Pinions, Rawhide

RAWHIDE PINIONS—See Gears and Pinions, Rawhide

REAL ESTATE BROKERS—See Brokers, Real Estate

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Direct cooling systems of highest quality, built by specialists. Efficient service guaranteed by nine years of past performance. Submit your specifications. Our engineering department is at your service.

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Flett Avenue, Racine, Wisconsin

"—because of Quality"

Diagonal Honeycomb Core
Square Wireless Honeycomb Core
Mercedes Honeycomb Core
Square Fin Tubular Core

G&O Radiators

THE G & O MFG. CO.
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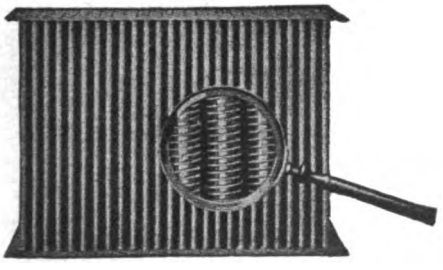
828 N. Broad St., Philadelphia, Pa.
1512 Kresge Bldg., Detroit, Mich.



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are sturdy and strong; a cooling system with increased radiating surface of seamless helical tubes. Their use on America's best trucks and tractors is a proof of their superiority.

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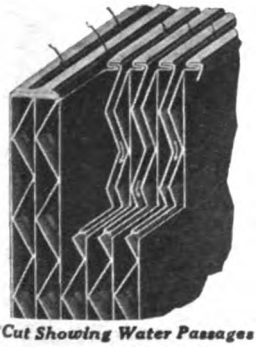
ROME-TURNEY RADIATOR CO. Rome, N. Y.



Cut Showing Water Passages

GORDON RADIATORS

Our construction permits of expansion and contraction, the strain being on the spacer and not on the water passages; our radiator will stand shocks and vibrations.

The water passes downward at an angle of 120°, the water passages being longer than when straight, hold more water, and produce a cooling medium of greatest efficiency. There can be no dead water. The "spacer" between the water passages gives indirect radiation in addition to the direct radiation from the water passages.

A high grade radiator made in an up-to-date factory, by practical experienced radiator men who have been in the radiator business since its inception.

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REAMER GRINDERS — See Grinders, Reamer

REAMERS, ADJUSTABLE—See Reamers, Standard

REAMERS, BATTERY CONNECTOR—See Tools, Storage Battery Repair

REAMERS, BEARING, FOR FORDS—See Reamers, Main Bearing

REAMERS, BUSHING FOR FORDS—See Reamers, Drive Shaft Bushing; also Reamers, Piston Bushing; also Reamers, Transmission Bushing

REAMERS, CONNECTING ROD, FOR FORDS—See Reamers, Main Bearing

REAMERS, CYLINDER FOR FORDS—See Reamers and Jigs, Cylinder

REAMERS, Drive Shaft Bushing for Fords

Hinckley-Myers Co., Jackson, Mich.

Wilson, K. R., 10-16 Lock St., Buffalo, N. Y. (See page 611.)

REAMERS, Main Bearing and Connecting Rod, for Fords

Detroit Garage Equipment Co., 406 E. Jefferson Ave., Detroit, Mich.

Dual Mfg. Co., 1424 Nicollet Ave., Minneapolis, Minn.

Dyer Co., G. H., 155 Brookline St., Cambridge, Mass.

Fairbanks Co., New York, N. Y. (Sole Distributors for Hempy-Cooper Mfg. Co., Kansas City, Mo.) (See pages 137 to 140.)

Hempy-Cooper Mfg. Co.—See Fairbanks Co.

Keystone Reamer & Tool Co., Millersburg, Pa. (See page 791.)

Lewis Tool Co., 612 Fifth Ave., S., Minneapolis, Minn.

Mayhew Steel Products, 291 Broadway, New York, N. Y.

Railway Specialty Co., Atchison, Kans. "Rysco."

Rysco—See Railway Specialty Co.

Universal Tool Co., 435 Woodward Ave., Detroit, Mich. (See pages 984 and 985.)

Utco—See Universal Tool Co.

Wilson, K. R., 10-16 Lock St., Buffalo, N. Y. (See page 611.)

REAMERS, Piston Bushing for Fords

American—See Fairbanks Co.

Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill. "American.") (See pages 137 to 140.)

Mayhew Steel Products, 291 Broadway, New York, N. Y.

Service Station Equipment Co.—See Fairbanks Co.

Tribune Engineering Co., Front St., Owego, N. Y.

REAMERS, Standard and Adjustable

Acme—See Schellenbach-Hunt Tool Co.

Adamantine—See American Tap & Die Co.

American Machine Products Co., 18th & Howard Sts., Detroit, Mich. "Ampco."

American Tap & Die Co., Greenfield, Mass. "Adamantine." (See page 927.)

Ampco—See American Machine Products Co.

Arrow Tool & Reamer Co., 422 Artillery Ave., Detroit, Mich.

Blancke Co., L. C., 10-12 Thomas St., New York, N. Y. (Sole Distributors for Blancke Twist Drill & Tool Co., Taunton, Mass.)

Blancke Twist Drill & Tool Co.—See Blancke Co.

Brubaker & Bros., W. L., 50 Church St., New York, N. Y. (See page 349.)

Butterfield & Co., (Division of Union Twist Drill Co.), Derby Line, Vt.

Cashman Tool Co., Waynesboro, Pa. (See page 841.)

Chadwick & Trefethen, 32 Bow St., Portsmouth, N. H. "Critchley."

Cleveland Twist Drill Co., Cleveland, O. "Paradox," "Peerless." (See page 369.)

Clough, R. M., Tolland, Conn.

Critchley—See Chadwick & Trefethen.

Cruban Machine & Steel Corp., 63 Duane St., New York, N. Y.

Davis Boring Tool Co., 3700 Forest Park Blvd., St. Louis, Mo.

Detroit Reamer & Tool Co., Detroit, Mich. (See page 925.)

Detroit Twist Drill Co., Detroit, Mich. (See page 955.)

Diamond—See Whitman & Barnes Mfg. Co.

Foster Machine Co., 1100 Beardsley Ave., Elkhart, Ind.

Gisholt Machine Co., 1315 E. Washington Ave. Madison, Wis.

Goddard & Goddard Co., 4724 Hastings St., Detroit, Mich.

Greenfield Tap & Die Corp., Greenfield, Mass. "Hercules." (See page 927.)

Hercules—See Greenfield Tap & Die Corp.

Ideal—See McCrosky Tool Co.

Illinois Tool Works, 154 E. Erie St., Chicago, Ill.

Kelly Reamer Co., 3705 W. 73rd St., Cleveland, O.

Keystone Reamer & Tool Co., Millersburg, Pa. (See page 791.)

Lincoln Twist Drill Co., Arlington St., Taunton, Mass.

McCarthy Drill & Tool Corp., 30 Church St. New York, N. Y.

McCrosky Tool Corp., Meadville, Pa. "Ideal."

Martell—See Taft-Peirce.

Mayhew Steel Products, 291 Broadway, New York, N. Y.

Morse Twist Drill & Machine Co., 163 Pleasant St., New Bedford, Mass.

National Twist Drill & Tool Co., 6522 Brush St., Detroit, Mich.

New Britain Machine Co., 5 Harvard St., New Britain, Conn.

Ohio Reamer Co., 5237 St. Clair Ave., Cleveland, O.

One Lock Reamer Co., New Haven, Conn.

Paradox—See Cleveland Twist Drill Co.

Peerless—See Cleveland Twist Drill Co.

Perelstrous & Storms Tool Corp., 42 Broadway, New York, N. Y.

Peters, Inc., Widener Bldg., Philadelphia, Pa. (See page 753.)

Polk & Son Co., A. J., Millersburg, Pa.

Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 339.)

Republic Tool & Mfg. Co., 1399-1401 W. Ninth St., Cleveland, O. (Jobber.) (See page 369.)

Rich Tool Co., Railway Exchange Bldg., Chicago, Ill. (See page 1017.)

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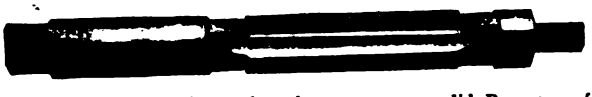
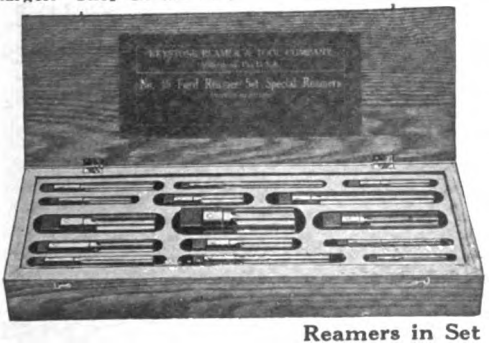
"Known from Coast to Coast"

KEYSTONE
REAMERS & MILLING CUTTERS
FOR AUTOMOBILES



Keystone Expansion Reamers Especially Designed for Ford Cars.

Expansion Reamers have the advantage over solid Reamers of being adjustable as to size. They are finished very close to size and can be adjusted from about .006 to .015 of an inch larger. They should be set to the correct size before using.



FORD SET No. 15

Thirteen Reamers covering 20 Bushings, taking care of every bushing that needs replacement.

We also manufacture Cylinder Reamers for Fords; Die and Screw Plate Sets; Hand Reamers in all sizes for all uses. Taper Pin Reamers. Write for complete catalog and prices.

Reamers in Set **No. 15**

2713-14-P	(with Pilot) Spindle
3521	Steering Gear Shaft
3309	Transmission Slow Speed
3820, 3844	Front and Rear Spring Perch
3052-B	Valve Stem. Oversize
3058-B	Push Rod. Oversize
3320-B-C	Transmission Driven Sleeve
3311, 3327-B	Transmission Driving Plate
2559X	Hub Cam Shaft
3042, 3043, 3044, 3545	Cam Shaft Front, Center and Rear Bearing and Steering Post Bracket Bushings
3022½-P	Piston Pin (with Pilot)
3314½	Transmission Triple Gear
3304	Transmission Reverse Gear
1076	Universal Joint Ford Truck

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REAMERS, Standard and Adjustable (Continued)

Rogers Works, John M., ft. Monmouth St., Gloucester City, N. J.

Schellenbach-Hunt Tool Co., 120 Opera Pl., Cincinnati, O. "Acme."

Screw Machine Products Corp., 1012 Eddy St., Providence, R. I.

Standard Tool Co., 6900-24 Central Ave., Cleveland, O.

Stapf & Co., John B., Dunkirk, N. Y.

Taft-Peirce Mfg. Co., Woonsocket, R. I. "Martell." (See page 849.)

Watervliet Tool Co., 25 N. Pearl St., Albany, N. Y.

Wetmore Reamer Co., 27th & St. Paul Sts., Milwaukee, Wis.

Whitman & Barnes Mfg. Co., E. Exchange St., Akron, O. "Diamond"

REAMERS, Transmission Bushing, for Fords

Keystone Reamer & Tool Co., Millersburg, Pa. (See page 791.)

Mayhew Steel Products, 291 Broadway, New York, N. Y.

Tribune Engineering Co., Front St., Owego, N. Y.

Watervliet Tool Co., 25 N. Pearl St., Albany, N. Y.

Wilson, K. R., 10-16 Lock St., Buffalo, N. Y. (See page 611.)

REAMERS AND JIGS, Camshaft Aligning for Fords

Wilson, K. R., 10-16 Lock St., Buffalo, N. Y. (See page 611.)

REAMERS and JIGS, Cylinder, for Fords

Alvord Reamer & Tool Co., Millersburg, Pa.

Chadwick & Trefethen, 32 Bow St., Portsmouth, N. H. "Critchley."

Critchley—See Chadwick & Trefethen.

Dyer Co., G. H., 155 Brookline St., Cambridge, Mass.

Foster-Johnson Reamer Co., 1052 Beardsley Ave., Elkhart, Ind. "Johnson."

Johnson—See Foster-Johnson Reamer Co.

Kelly Reamer Co., 3705 W. 73rd St., Cleveland, O.

Keystone Reamer & Tool Co., Millersburg, Pa. (See page 791.)

Tribune Engineering Co., Front St., Owego, N. Y.

REAMING BUSHINGS—See Bushings, Drilling and Reaming

REAR AXLE GREASE RETAINERS FOR FORDS—See Retainers, Rear Axle Grease

REAR AXLE REPAIR STANDS FOR FORDS—See Stands, Rear Axle Repair

REAR AXLE SHAFTS—See Shafts, Rear Axle

REAR AXLE SLEEVE PULLERS FOR FORDS—See Pullers, Axle Sleeve Bearing

REAR AXLE SPINDLES FOR FORDS—See Spindles, Emergency Rear Axle

REAR AXLE TAPER SHIMS FOR FORDS—See Shims, Rear Axle Taper

REAR AXLE TRUSS RODS FOR FORDS—See Rods, Rear Axle Truss

REAR AXLES—See Axles, Rear

REAR AXLES FOR FORDS—See Axles, Worm Drive Rear

REAR STARTERS, MOTOR BOAT—See Starters, Motor Boat, Rear Engine

REBABBITTING JIGS for Fords—See Jigs, Main Bearing and Connecting Rod Babbitting

REBORING MACHINES—See Machines, Cylinder Reboring; for Cylinder Reboring Tools—See Tools, Portable Cylinder Reboring

REBORING TOOLS—See Tools, Portable Cylinder Reboring

REBOUND STRAPS—See Straps, Rebound

REBUILT TIRES—See Tires, Rebuilt

RECHARGERS, MAGNET—See Chargers, Magneto Magnet

RECORDERS, TIME—See Clocks, Watchman's

RECORDERS, Vehicle Movement

(For recording time vehicle is used)

American Taximeter Co., 16 W. 61st St., New York, N. Y. "Recordograf."

Brown Spring Oiler Co., 6911 Carnegie Ave., Cleveland, O. "Traflog."

Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.

Hoggson & Co., S. H., Thames Bldg., New York, N. Y. "Joyometer."

Joyometer—See Hoggson & Co.

Ohmer Fair Register Co., Bolender & Big Four R. R., Dayton, O.

Recordograf—See American Taximeter Co.

Sattler, Hans, Sheboygan, Wis.

Service Recorder Co., 2344 E. 105th St., Cleveland, O. "Servis."

Servis—See Service Recorder Co.

Traflog—See Brown Spring Oiler Co.

RECORDING BAROGRAPHS—See Barographs, Recording

RECORDING CLOCKS—See Clocks, Time Recording and Watchman's

RECTIFIERS, Alternating Current

(For transforming alternating current to direct current for storage battery charging)

Ab-rec—See American Battery Co.

Advance Electric Co., 131 E. Sixth St., Los Angeles, Cal.

American Battery Co., 1132-34 Fulton St., Chicago, Ill. "Amrec," "Ab-rec."

Amrec—See American Battery Co.

Beacon Rectifier Co., 6 Dell Terrace, Boston, Mass.

Cambridge—See Clapp-Eastham Co.

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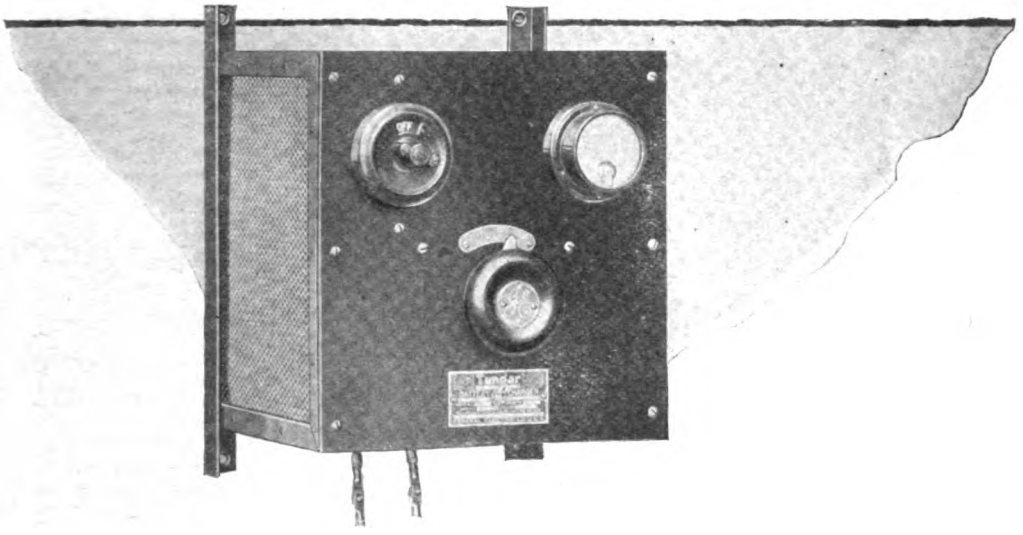
Real points of superiority in a product, not mere selling arguments, are a firm foundation for the continued satisfaction of users



Why Tungars Sell and Stay Sold

Thousands of garage type Tungar Battery Chargers (for garages and service stations) have been sold and are giving satisfaction BECAUSE:

1. Tungar gives the largest charging capacity for the least money invested.
2. It costs less to operate than others that are more expensive to buy.
3. It operates alone and just as well as when it is being watched. It works twenty-four hours a day, and requires no attention except to give it more work to do after it has charged a group of batteries.
4. A Tungar can be put in operation in a few minutes after it is received. Very easy to install. Complete instructions are furnished.
5. Heat or cold makes no difference to Tungar.
6. There are **no moving parts—no oil or grease** needed.
7. Tungar is simple to operate. Just a turn of one switch—then regulate the current.
8. It is **safe**—approved by the Fire Underwriters.
9. Batteries can't discharge through the Tungar if the alternating supply fails. It is further protected by fuses as an additional precaution.
10. Tungar is flexible. One to 20 batteries can be charged at various currents up to six or seven amperes.
11. Tungar is self-starting. Turn a switch and it starts. If the alternating current fails the Tungar stops, but as soon as the alternating current comes back again the Tungar begins charging at the same rate as when it stopped.
12. Tungar is strong mechanically, well designed electrically, neat in appearance and all live parts are totally enclosed.

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General Office Schenectady, N.Y.

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RECTIFIERS, Alternating Current (Continued)

Clapp-Eastham Co., 139 Main St., Cambridge, Mass. "Cambridge."

Electric Products Co., Cleveland, O. "Wotton." (See page 385.)

F. F.—See France Mfg. Co.

Fore Electrical Mfg. Co., 5255 N. Market St., St. Louis, Mo.

France Mfg. Co., 10325 Berea Rd., Cleveland, O. "F. F."

General Electric Co., Schenectady, N. Y. "Tungar." (See page 793.)

Hertner Electric & Mfg. Co., 1905 W. 112th St., Cleveland, O.

Mohawk Electric Mfg. Co., 15 Kirk Pl., Newark, N. J.

Murphy Electricity Rectifier Co., 187 N. Water St., Rochester, N. Y.

Shonts Co., H. B., 157 W. 54th St., New York, N. Y. (Dealers.) (See page 733.)

Sirch Electrical & Testing Laboratories, 126 W. Third St., Los Angeles, Cal.

Stahl Rectifier Co., 1401 W. Jackson Blvd., Chicago, Ill.

Tungar—See General Electric Co.

United Electric Apparatus Co., 1529 Columbus Ave., Boston, Mass.

Valley Electric Co., 3157 S. Kingshighway, St. Louis, Mo. (See page 385.)

Wagner Electric Mfg. Co., 6400 Plymouth Ave., St. Louis, Mo.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Wotton—See Electric Products Co.

RECTIFIERS, Alternating Current, for Fords

Small chemical rectifier to be attached to the car to permit the charging of storage batteries from the magneto.

Illinois Starter & Magneto Co., 2450 Calumet Ave., Chicago, Ill.

REDUCING VALVES OR REGULATORS—See Regulators, Acetylene Pressure

REEDS, Horn

Riley-Klots Mfg. Co., 17 Mulberry St., Newark, N. J.

REEL LIGHTS—See Lamps, Electric Hand or Inspection; also Lights, Spot

REELS, Automatic Extension Lamp

Alert Sales Corp., Carter Bldg., Rochester, N. Y. (Sole Distributors for Fitt Machine Co., Jas., Rochester, N. Y. "Clark.")

Anderson Electric & Equipment Co., 154-60 Whitney St., Chicago, Ill. "Reelite." (See page 762.)

Autex—See Cincinnati Specialty Mfg. Co.

Cincinnati Specialty Mfg. Co., 1911 Powers St., W., Cincinnati, O. "Autex." (See page 871.)

Clark—See Alert Sales Corp.

Fitt Machine Co., Jas.—See Alert Sales Corp.

Reelite—See Anderson Electric & Equipment Co.

REELS, Automatic Hose

Eco—See Western Mfg. Co.

Western Mfg. Co., Sixth Ave., E. & S. Third St., Oskaloosa, Ia. "Eco."

Wilkinson, A. L., 811 Dime Bank Bldg., Detroit, Mich. (See page 1153.)

REFACERS, VALVE—See Tools, Valve Reseating

REFLECTING MIRRORS, COWL LIGHT—See Mirrors, Cowl Light Reflecting

REFLECTORS, GAGE GLASS—See Mirrors, Water Gage

REFLECTORS, Headlight, for Fords

(Parabolic Reflectors for electric lights)

C-S—See Culver-Stearns Mfg. Co.

Columbus Auto Brass Co., Columbus, O. (See page 1139.)

Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass.

Faw, J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributor for "C-S." Reflectors.) (See page 241.)

Full-Ray—See Teepell, Edward A.

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco."

Teepell, Edward A., 1523 N. 63d St., Philadelphia, Pa. "Full-Ray."

Vesta Battery Corp., 2100 Indiana Ave., Chicago, Ill.

REFLECTORS, HEADLIGHT—See Reflectors, Mirror Lamp

REFLECTORS, LAMP—See Reflectors, Mirror Lamp

REFLECTORS, Mirror Lamp

(For special dimming reflectors—See Dimmers)

Bache & Co., Semon, West & Hubert Sts., New York, N. Y.

Bausch & Lomb Optical Co., St. Paul & Smith Sts., Rochester, N. Y.

Fry Glass Co., H. C., Rochester, Pa.

Jefferson Glass Co., State St., Follansbee, W. Va.

Lancaster Lens Co., 220-26 W. Main St., Lancaster, O.

Macbeth-Evans Glass Co., Pittsburgh, Pa. (See page 357.)

Matisse Corp., C. & A., 543-49 E. 116th St., New York, N. Y.

REGISTERS, Autographic and Manifold

American Sales Book Co., Elmira, N. Y. (See page 1123.)

Autographic Register Co., Tenth & Clinton Sts., Hoboken, N. J. "Shouperior."

Automatic Bookkeeping Register Co., 18th & Wyandotte Sts., Kansas City, Mo.

Champion Register Co., 6921 Colfax Rd., Cleveland, O.

Egry Register Co., 429 E. Monument St., Dayton, O.

Globe Register Co., 2412-20 Reading Rd., Cincinnati, O.

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Let him help you

There is a better way to keep the store records you need

In your city there is a representative of The National Cash Register Company. He is a student of business systems. He has been trained to be of service to merchants—to help them solve their problems.

Let him show you how you can get the store records you need without working overtime on day books, pass books, ledgers, and memorandums.

He will show you the easiest way to get these records. You need them once a year for your Income Tax report. You need the same figures every day to control your business.

We make cash registers for every line of business. Priced $75 and up.

NATIONAL CASH REGISTER CO.

DAYTON, OHIO.

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REGISTERS, Autographic and Manifold (Continued)

Hamilton Autographic Register Co., Hamilton O.

K. & B. Register Co., Symmes Ave., Hamilton, O.

McCaskey, Alliance, O.

National Cash Register Co., Dayton, O. (See page 795.)

Shouperior—See Autographic Register Co.

Standard Register Co., Albany Ave. & Big Four Tracks, Dayton, O.

Uarco—See United Autographic Register Co.

United Autographic Register Co., 2816-40 W. 48d St., Chicago, Ill. "Uarco."

REGISTERS, Dashboard Purchase

(Device for attachment to dashboard to permit pencil record being kept of all purchases)

Auto-Memo Co., Lyric Bldg., Richmond, Va.

REGISTERS, MANIFOLD—See Registers, Autographic

REGRINDING OF BALL BEARINGS—See Bearings, Ball, Reground

REGRINDING OF CYLINDERS—See Cylinders, Regrinding of

REGULATORS, Acetylene Pressure or Reducing Valves

(For use with acetylene lamps or starters; See also Controllers, Acetylene Lamp)

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Prest-O-Lite Co., 30 E. 42d St., New York, N. Y. (See page 1221.)

REGULATORS, CARBURETOR, FOR FORDS—See Regulators, Thermostatic Carburetor

REGULATORS, Electric Light, for Fords

(For controlling the flow of current to headlights to prevent burning out of bulbs at high engine speeds)

Aid Mfg. Co., 2625-31 Stewart Ave., Chicago, Ill. "Amco." (See page 547.)

Amco—See Aid Mfg. Co.

American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "Brilite."

Aske Moore Corp., 19 Lake Ave., N., Duluth, Minn.

Banes & Muench, 70th Ave. & York Rd. (Oak Lane), Philadelphia, Pa.

Brilite—See American Automobile Accessories Co.

Burn Oil Device Co., 129 N. Jefferson St., Peoria, Ill.

Clamert Mfg. Co., Third & Ross Sts., Pittsburgh, Pa. (Sole Distributors for Tirrill Regulator Mfg. Co., Pittsburgh, Pa.)

Constolite—See Detroit Starter Co.

Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass.

Detroit Starter Co., 124 E. Larned St., Detroit, Mich. "Constolite."

Dimit—See Suburban Lighting & Gas Engine Co.

Double Lite Sales Co., 139 N. Jefferson St., Peoria, Ill.

Even-Lite Mfg. Co., 539 S. Third St., Paducah, Ky.

Evenlite—See Valley Electric Co.

Fodrectifier—See Warnerlite Products Corp.

Fracto Specialty Co., 161 Massachusetts Ave., Boston, Mass.

Hastings Mfg. Co., 36 Mill St., Hastings, Mich. "Lite-a-Ford." (See page 567.)

Jefferson Electric Mfg. Co., 426-30 S. Green St., Chicago, Ill.

Lite-a-Ford—See Hastings Mfg. Co.

Magnestat—See St. Cloud Electrical Mfg. Co.

Morse, Frank W., 280 Congress St., Boston, Mass. (See page 549.)

Perrin Mfg. Co., 965 Woodward Ave., Detroit, Mich.

Power Spark Intensifier Co., Watertown, S. Dak.

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco."

St. Cloud Electrical Mfg. Co., St. Cloud, Minn. "Magnestat."

Suburban Lighting Co., Toledo, O. "Dimit."

Sunlight System Co., 14 E. Jackson Blvd., Chicago, Ill.

Tirrill Regulator Mfg. Co.—See Clamert Mfg. Co.

Valley Electric Co., 3157 S. Kingshighway, St. Louis, Mo. (See page 385.)

Van Sicklen Co., Elgin, Ill. (See page 1105.)

Warnerlite Products Corp., Davenport, Iowa. "Fodrectifier." (See page 325.)

Westphal, H. F., 3217 North Ave., Milwaukee, Wis.

Williams Mfg. Co., Clarksburg, W. Va. "Wilson."

Wilson—See Williams Mfg. Co.

REGULATORS, HEADLIGHT, FOR FORDS—See Regulators, Electric Light

REGULATORS, LIGHT, FOR FORDS—See Regulators, Electric Light

REGULATORS, PRESSURE—See Regulators, Acetylene Pressure; also Regulators, Tank Pressure

REGULATORS, STEAM PRESSURE—See Controllers, Vulcanizer Steam Pressure

REGULATORS, Tank Pressure

(For regulating the pressure on gasoline or oil tanks when pressure is taken from the exhaust)

Buckeye—See Central Brass & Fixture Co.

Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O.

Messer Welding Supply Corp., 111 11th St., Brooklyn, N. Y.

REGULATORS, Thermostatic, Carburetor, for Fords

(Thermostatic attachment to automatically adjust carburetor needle for all changes in temperature)

Automotive Products Co., Waukesha, Wis. "Thermix."

Goodrich-Lenhart Mfg. Co., Hamburg, Pa. (See page 721.)

Thermix—See Automotive Products Co.

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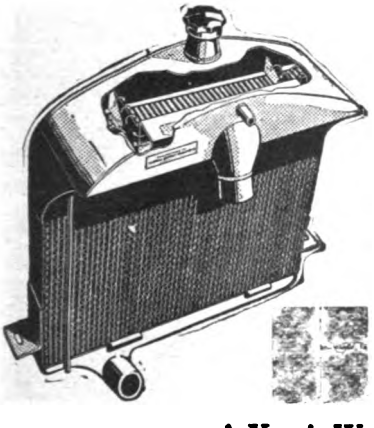
RADIATORS FOR TRUCKS

The Bush Mfg Co.

HARTFORD, CONN.

The Thermostat Does It



The

CURRAN

An All Year Radiator

From 15 degrees below zero to 100 above—a range of 115 degrees. The Curran is the one radiator built having this range of temperature in mind. Its construction permits solid freezing without injury—its angle strike and simplified thermostatic control regulates the flow of the water to the cooling requirements of the engine (note cut away illustration of our patent circulation control). Special construction adaptable to Ford trucks and delivery cars.

DEALERS—Write us to-day for our exclusive agency proposition. Our method of dealing directly with you facilitates service and insures maximum dealer profits.

A Year's Written Factory Guarantee

"Freezing Is Harmless—Overheating Impossible"

Curran-Detroit Radiator Co.

Automotive Radiation Engineers

1984 W. Lafayette Blvd., Detroit

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REGULATORS, Water Circulating

(Thermostatic regulators for maintaining a constant temperature of the cooling water on gasoline cars; See also Covers, Automatic Radiator. For hand-operated Regulators—See Valves, Water Circulation Regulating)

Beneke & Kropf Mfg. Co., 2559 W. 21st St., Chicago, Ill. "Rayfield." (See page 193.)

Fulton Co., Knoxville, Tenn. "Sylphon."

Motor Cooling System Co., Charles & Lombard Sts., Baltimore, Md.

Rayfield—See Beneke & Kropf Mfg. Co.

Sylphon—See Fulton Co.

REGULATORS, Water Level

(For automatically maintaining the proper level of water in the boilers of steam cars

Brookins Mfg. Co., Dayton, O.

REGULATORS, Window

(For opening and closing the windows in closed cars)

Clement—See Walker Body Co.

Cowles & Co., C., New Haven, Conn. "Fisher." (See page 651.)

Dura Mechanical Hardware Co., 2288-98 S. Albion Ave., Toledo, O.

Fisher—See Cowles & Co.

Liberty Works, Egg Harbor City, N. J. (See page 549.)

O'Brien Mfg. Co., Joseph F., 391 Broadway, New York, N. Y.

Perfect Window Regulator Co., 20 Exchange Place, New York, N. Y. (See page 801.)

Straight Line Regulator Corp., 794 Seventh Ave., New York, N. Y.

Ternstedt Mfg. Co., Artillery & Muster Ave., Detroit, Mich. (See page 799.)

Walker Body Co., Amesbury, Mass. "Clement."

RELEASE CLEVISES—See Hitches, Automatic Tractor

RELEASERS, AUTOMATIC CRANK, FOR FORDS—See Cranks, Safety Starting

RELEASERS, Clutch, for Fords

(For automatically releasing the clutch when the foot brake is applied)

Humbolt—See Republic Auto Parts Co.

Ideal Brass Works, 560 N. Elder Ave., Indianapolis, Ind.

Ideal Mfg. Co., 1525 Main St., Anderson, Ind.

McEwen, R. A., Natoma, Kans.

Metal Stamping Co., 18th St. & East Ave., Long Island City, N. Y.

Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. (See page 317.)

Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Humboldt."

Zimmerman Mfg. Co., 247-51 W. Lincoln Way, Valparaiso, Ind.

RELEASERS, CRANK FOR FORDS—See Cranks, Safety Starting

RELIEF COCKS—See Cocks; also Cups, Spring Key

RELINERS, TIRE—See Shoes, Inner Tire

REMAGNETIZERS, MAGNET—See Chargers, Magneto Magnet

REMOVABLE RIMS—See Rims, Demountable

REMOVABLE WHEELS—See Wheels, Wire; also Wheels, Pressed and Wrought

REMOVABLE WHEELS FOR FORDS—See Wheels, Demountable

REMOVERS, BUSHING, FOR FORDS—See Extractors, Bushing

REMOVERS, Carbon

(Chains or balls for use in cylinders to remove carbon; for Chemical Carbon Removers—See Compounds, Carbon Removing; for Oxygen Carbon Burners—See Machines, Engine Decarbonizing; for Steam Carbon Removers—See Moisteners. Air or Mixture)

Michener, E. S., 27 Market St., Brownsville Pa.

Teepell, Edward A., 1523 N. 62d St., Philadelphia, Pa.

REMOVERS, ENAMEL—See Removers, Paint

REMOVERS, Paint, Enamel and Varnish

Acme White Lead & Color Works, 8250 St. Aubin Ave., Detroit, Mich.

Ad-El-Ite—See Adams & Elting Co.

Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite." (See page 267.)

Automotive Supply Mfg. Co., 2005½ Main St., Dallas, Tex. "Cactus."

Behlen & Bro. H., 871 Pearl St., New York, N. Y.

Berry Bros., 211 Lieb St., Detroit, Mich.

Bilchaco—See Billings-Chapin Co.

Billings-Chapin Co., 1163 E. 40th St., Cleveland, O. "Bilchaco."

Boyle Co., A. S., 1934-40 Dana Ave., (Evanston) Cincinnati, O. "Varnigo."

Bradley & Vrooman Co., 2639 Dearborn St., Chicago, Ill. "Crown."

Bridgeport Wood Finishing Co., New Milford, Conn.

Cactus—See Automotive Supply Mfg. Co.

Callery & Co., W. W., 188 36th St., Pittsburgh, Pa.

Chalmers Chemical Co., 115 Chestnut St., Newark, N. J. "Phenoid."

Crown—See Bradley & Vrooman Co.

Day & Co., James B., 214 W. Ohio St., Chicago, Ill. "Kut-Kote."

Denegre Baked Enamel Remover Co., 1922-24 Ave. F, Birmingham, Ala.

Detroit White Lead Works, 1960 Milwaukee Ave., E., Detroit, Mich. "Rogers Abluent."

Eberson-Lindsley Paint Co., 1330-32 Morgan St., St. Louis, Mo. "V. & P."

Eclipse—See Gould & Cutler.

Enterprise Paint Mfg. Co., Peoria & Van Buren Sts., Chicago, Ill. "Noxall."

Forest City Paint & Varnish Co., 3324 Lakeside Ave., Cleveland, O.

Gillespie & Son, Chas. H., 19 Dey St., Jersey City, N. J. "Monarch Bull Dog."

Glidden Co., Cleveland, O.

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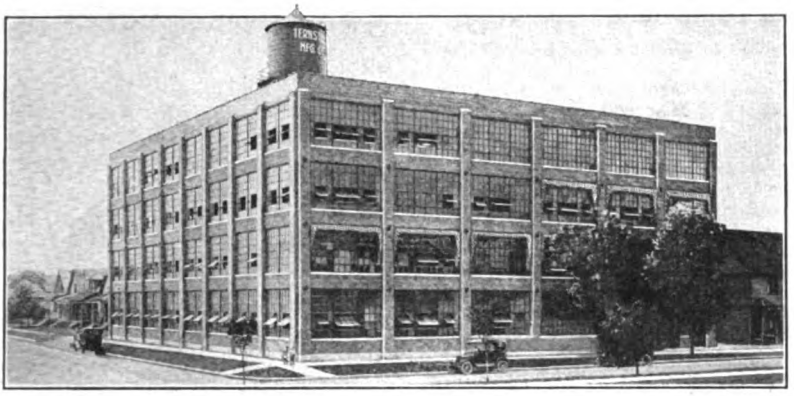


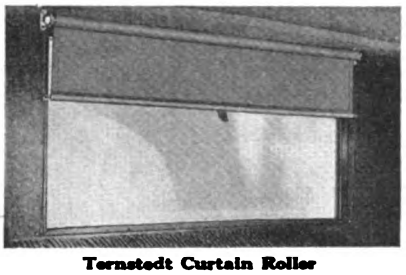
Closed Body Hardware

Ternstedt Anti-Rattlers

500

600

700



Ternstedt Curtain Roller

Ternstedt Bumpers

1100 1120

1110 1115

1130 1131

WE specialize in closed body hardware. We manufacture Window Regulators, Curtain Rollers, Rubber Door Bumpers, Anti-Rattlers, Hinges, Lever Door Locks, etc.

¶ Let us know your requirements and we will gladly furnish you with an estimate

TERNSTEDT WINDOW REGULATORS

Fig. 1. Front

Fig. 4. Front

Fig. 4. Rear

Fig. 1. Rear

Fig. 2. Front

Fig. 2. Rear

Fig. 3. Front

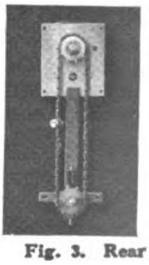


Fig. 3. Rear

TERNSTEDT MANUFACTURING Co.

Artillery and Muster Avenue, :: DETROIT, U. S. A

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REMOVERS, Paint, Enamel and Varnish (Continued)

Gould & Cutler, 45 Sudbury St., Boston, Mass. "Eclipse."
Idol-Yusso—See Schlegel Mfg. Co.
Imp—See Rust-Off Mfg. Co.
Indianapolis Paint & Color Co., 120-24 S. Illinois St., Indianapolis, Ind. "Rapid."
Jewel—See Wadsworth-Howland Co.
Klean-Itt—See Lawrence & Co.
Kut-Kote—See Day & Co.
Lawrence & Co., W. W., Pittsburgh, Pa. "Klean-Itt."
Lingerwett—See Wilson-Imperial Co.
Lucas & Co., John, 322-30 Race St., Philadelphia, Pa. "Mirac."
Mirac—See Lucas & Co.
Monarch Bull Dog—See Gillespie & Son.
Nice, Eugene E., 268-74 S. Second St., Philadelphia, Pa.
Noxall—See Enterprise Paint Mfg. Co.
Oakite—See Oakley Chemical Co.
Oakley Chemical Co., 22 Thames St., New York, N. Y. "Oakite."
Parrott Varnish Co., 453 N. Washington Ave., Bridgeport, Conn.
Phenoid—See Chalmers Chemical Co.
Quickwork—See Standard Varnish Works.
Rapid—See Indianapolis Paint & Color Co.
Rogers Abluent—See Detroit White Lead Works.
Rust-Off Mfg. Co., 481 Ellicott St., Buffalo, N. Y. "Imp."
Sailors & Lamb Co., 7921 Woodland Ave., Cleveland, O. "Superior."
Schlegel Mfg. Co., Oscar, 124 E. 13th St., New York, N. Y. "Idol-Yusso."
Standard Varnish Works, 90 West St., New York, N. Y. "Quickwork."
Supremo—See Sailors & Lamb Co.
V. & P.—See Eberson-Lindsley Paint Co.
Varnigo—See Boyle Co.
Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."
Wilson-Imperial Co., 115 Chestnut St., Newark, N. J. "Wonderpaste," "Lingerwett."
Wonderpaste—See Wilson-Imperial Co.

REMOVERS, PISTON RING—See Tools, Piston Ring

REMOVERS, TIRE—See Tools, Tire

REMOVERS, VARNISH—See Removers, Paint

REMOVING COMPOUNDS—See Compounds, Rust Preventing and Removing; also Compounds, Tar Removing; also Compounds, Carbon Removing; also Removers, Paint and Varnish

REMOVING TOOLS—See Tools, Valve Lifting and Spring Compressing; also Tools, Valve Cage Removing

REPAIR BRACKETS FOR FORDS—See Brackets or Supports, Engine Repair

REPAIR CLAMPS—See Clamps, Spring Repair

REPAIR CLAMPS, TRANSMISSION DRUM FOR FORDS—See Clamps or Vises, Transmission Drum Repair

REPAIR KNIVES—See Knives, Tire Repair

REPAIR LINKS—See Links, Tire Chain Repair

REPAIR PARTS—See Parts, Repair; also Parts, Speedometer Repair; also Parts, Storage Battery Repair; also Parts, Speedometer Repair; also Parts, Magneto, Coil and Distributor

REPAIR STANDS—See Stands, Motor Repair; also Stands, Rear Axle Repair; also Stands, Radiator Repair

REPAIR SUPPORTS FOR FORDS—See Brackets or Supports, Engine Repair

REPAIR TRUCKS—See Trucks, Repair

REPAIRERS, SPRING—See Clamps, Spring Repair

REPAIRING OF SCORED CYLINDERS—See Cylinders Scored, Repairing of

REPAIRING OF WHEELS—See Wheels, Repairing of

RESEATERS, VALVE—See Tools, Valve Reseating

RESERVE COCKS—See Valves, Two Way Tank

RESERVE COCKS FOR FORDS—See Cocks, Fuel Supply

RESERVE TANKS—See Tanks, Emergency or Reserve

RESERVE VALVES—See Valves, Two Way Tank

RESERVE VALVES FOR FORDS—See Cocks, Fuel Supply and Reserve

RESTS, BACK—See Rests, Cushion; also Rests, Motorcycle Back

RESTS, Bow

(See also Holders, Top; also Separators, Bow)

Anchor—See North & Judd Mfg. Co.
Attwood Brass Works, Grand Rapids, Mich. (See page 1195.)
Bantlin Co., Julius J., Cincinnati, O. "Hoover." (See page 505.)
Brewer-Tichener Corp., Cortland, N. Y. (See page 567.)
Campbell—See Perkins-Campbell Co.
Desoco—See Detroit Socket Co.
Detroit Socket Co., 2744 W. Jefferson Ave., Detroit, Mich. "Desoco."
Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.
Hoover—See Bantlin Co.
Jonah & George, Little's Ct., Merrimac, Mass.
Metal Stamping Co., 18th St. & East Ave., Long Island City, N. Y.
North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn. "Anchor."
Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. "Campbell." (See page 317.)

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WHITE

RADIATORS and CORES

are built to give service the year round under all climatic conditions.

We solicit inquiries and blue prints

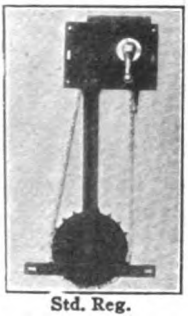
Agents and Dealers Wanted

to handle the new White radiators for Ford cars and trucks

WHITE & STEIDLE

(Sole Manufacturers)

P. O. Box 173 **Cincinnati, Ohio, U. S. A.**

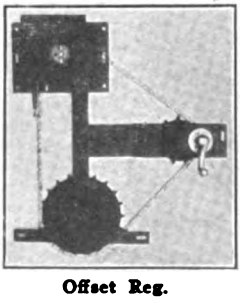


Std. Reg.

Rear Quarter Reg.

PERFECT WINDOW REGULATORS

We specialize in Window Regulators for closed bodies. All exclusive American and European automobile manufacturers and body builders have adopted "Perfect Regulators" as standard equipment.



Offset Reg.

Installation

METAL CHANNELS

[redacted] No. 1 [redacted] No. 2 [redacted] No. 3 [redacted] Fence Rail

PERFECT WINDOW REGULATOR COMPANY

20 Exchange Place, New York City

Pacific Coast Representative: Scovel Iron Store Company, San Francisco, Cal.
Foreign Branch: H. M. Hobson, Ltd., London, England
Foreign Representatives: Messrs. Hobson (Belgium), Ltd., Brussels, Belgium. Technisch Bureau Bylevald, Amsterdam, Holland.

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RESTS, Bow (Continued)

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

Woodruff & Sons Co., Walter W., Mount Carmel, Conn.

RESTS, Cushion Back

(Special removable cushions for back rests for drivers seats)

A & E Auto Top Co., 33-35 E. Cross St., Ypsilanti, Mich. (See page 325.)

Accurate Cover Co., 373 Canal St., New York, N. Y.

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 321.)

Automobile Apparel Co., Bush Ave., Port Chester, N. Y.

B. E. Mfg. Co., 18 W. 18th St., New York, N. Y. "Eezback." (See page 321.)

Bailey-Fitwell Co., 1318 S. Grand Ave., Los Angeles, Cal. "Fitwell."

Bantlin Co., Julius J., Cincinnati, O. (See page 505.)

Buob & Scheu, 500-10 Webster St., Cincinnati, O. (See page 325.)

Busse & Co., W. A., 2700 W. Lake St., Chicago, Ill.

Campbell—See Perkins-Campbell Co.

Casco—See Cincinnati Auto Specialty Co.

Central Auto Top & Leather Co., 419½ N. Capitol Ave., Indianapolis, Ind.

Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Casco."

Clifton Mfg. Co., 323-27 Pleasant St., Waco, Texas.

Columbus Upholstery Supply Co., 112 N. Third St., Columbus, O.

Comfo Lux Cushion Co., Claus Bldg., Ottawa, Ill.

Comfy—See Niagara Fabric Mfg. Co.

Dunham Co., Thos., Aurora, Ill. (See page 167.)

E-Z—See Tower & Co.

Easybak—See Holden Mfg. Co.

Economy Seat Co., 3132-36 S. Canal St., Chicago, Ill. "Esco," "E-Z."

Eezback—See B. E. Mfg. Co.

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 545.)

Esco, E-Z—See Economy Seat Co.

Fitwell—See Bailey-Fitwell Co.

Fitzwell—See Niagara Fabric Mfg. Co.

Genesee Mfg. Co., 516-18 Harrison St., Flint, Mich.

Gilbert Mfg. Co., 353 York St., New Haven, Conn.

Gordon Co., J. P., 555 N. Fourth St., Columbus, O. (See page 319.)

Hodes-Zink Mfg. Co., 312 W. State St., Fremont, O. "Komfy."

Holden Mfg. Co., 409 N. Franklin Ave., St. Paul, Minn. "Easybak."

Jenks & Muir Mfg. Co., 6441 Hastings St., Detroit, Mich.

Komfy—See Hodes-Zink Mfg. Co.

Lockwood Mfg. Co., Kansas City, Mo. (See page 323.)

Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.

Niagara Fabric Mfg. Co., 47 Green St., New York, N. Y. "Fitzwell." "Comfy."

Omaha Auto Top Co., 709-11 S. 15th St., Omaha, Neb.

Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. "Campbell." (See page 317.)

Powers Mfg. Co., Waterloo, Ia. (See page 593.)

Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo.

Sterling Top & Equipment Co., 518-22 W. 57th

Thomas Auto Top Co., 417 E. Jackson St., Muncie, Ind.

Tower & Co., Cohasset, Mass. "E-Z."

RESTS, Cushion Back, for Fords

(Special cushions to apply to top of seat back to increase height of back cushion)

Copp Co., George W., 518 W. 58th St., New York, N. Y. (See page 323.)

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 545.)

Gordon Co., J. P., 555 N. Fourth St., Columbus, O. (See page 319.)

Omaha Auto Top Co., 709-11 S. 15th St., Omaha, Neb.

Wood Co., W. C., 105-07 Western Ave., Minneapolis, Minn.

RESTS, FOOT—See Rests or Rails, Foot

RESTS, Heel

(For rendering operation of clutch or accelerator pedals easier and less tiresome)

Auto Pedal Co., 318-20 W. 52d St., New York, N. Y.

Beedee Distributing Service, 613 W. Pico St., Los Angeles, Cal. (Sole Distributors for De Luxe Auto Mfg. Co., Los Angeles, Cal.) (See page 1137.)

Bloom Auto Specialty Co., 18 Charlotte St., Tiffin, O. "Resto."

Comfort—See General Appliance Co.

Continental Auto Parts Co., 1807 E. 17th St., Columbus, Ind. (See page 419.)

De Luxe Auto Mfg. Co.—See Beedee Distributing Service.

E-Z—See Henderson-Cloud Co.

E-Z Mfg. Co., 4851 Spring Grove Ave., Cincinnati, O.

General Appliance Co., 100 Boylston St., Boston, Mass. "Comfort."

Henderson-Cloud Co., 1032 S. Grand Ave., Los Angeles, Cal. "E-Z." (See page 697.)

Hicks Mfg. Corp., 7508-12 Saginaw Ave., Chicago, Ill.

Hon—See Honeyman Co.

Honeyman Co., W. A., 1271 24th Ave., San Francisco, Cal. "Hon."

Humboldt—See Republic Auto Parts Co.

Lucas & Son, J. L., 3 Fox St., Bridgeport, Conn.

Neville Steering Wheel & Mfg. Co., 602 Norris St., Wayne, Mich. (See page 1135.)

Republic Auto Parts Co., 31-35 Tenth St., Long Island City, N. Y. "Humboldt."

Resto—See Bloom Auto Specialty Co.

Spiro Mfg. Co., C., 68-72 E. 131st St., New York, N. Y. "Uniq."

Stanwood Equipment Co., 308 N. Michigan Blvd., Chicago, Ill. (See page 91.)

Star Aluminum Foundry, 3619-21 18th St., San Francisco, Cal.

Uniq—See Spiro Mfg. Co.

Wagner Mfg. Co., E. R., North Milwaukee, Wis. (See page 905.)

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

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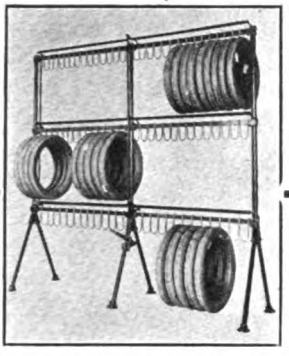

The Perfection Rack Displays and Protects Your Tires

Every tire is held securely in place by an individual patented hanger. They are well displayed and protected against theft by a master locking arm.

The rack is made of metal and reinforced at all joints. Carried in stock sizes of 10 and 12 feet—either 2 or 3 tier. We can also make to order any size to meet your individual requirements. Write for Booklet "D" and prices.

The Perfection Garage Equipment Co.

Hagerstown, Maryland, U. S. A.

PERFECTION

TIRE LOCKING AND DISPLAY RACK

FELT PACKINGS

Also Leather, Rubber, Asbestos or Paper Gaskets for any mechanical purpose from all materials:

The F. L. Sutherland Company

139 Beaubien St., Detroit, Mich.

AJAX AUTO & AERO RADIATORS

MANIFOLDS TANKS

We make Special Cores for re-coring any radiator.

"AJAX" square tube type honeycomb in sizes 2", 2½", 3", 3½", 4", and 5" deep. "V"-shape cores.

"PERFECTION" hexagon tube, light honeycomb core in 2⅛" size for Ford, Maxwell, Chevrolet and other light cars. Dealers and repair men write for prices and samples.

AIRPLANE RADIATORS complete as supplied U. S. Army and Navy and prominent builders.

SPECIAL MANIFOLDS. Light weight sheet metal intake and exhaust manifolds for racing, airplane, and marine engines.

GAS AND OIL TANKS FENDERS

"AJAX" Cast Bottom Tank for Ford radiators with water connection and side brackets all cast solid. No more breaks and leaks. U. S. Patents. Patented in Canada.

"AJAX" Improved Ford radiator with patent bottom tank and "Perfection" Hexagon tube honeycomb core. An "Overstrength" Ford Radiator

AJAX AUTO & AERO SHEET METAL CO., Inc.

and

Ajax Perfection Mfg. Co., Inc., successors to Perfection Radiator Co., Inc.

419 West 47th St., New York City

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RESTS, Heel, for Fords

Lucas & Son, J. L., 8 Fox St., Bridgeport, Conn.

Neville Steering Wheel & Mfg. Co., 602 Norris St., Wayne, Mich. (See page 1135.)

RESTS, Motorcycle Back

Fentress-Newton Mfg. Co., 1011-19 W. Lafayette Blvd., Detroit, Mich. "F-N."

Fentress-Newton Mfg. Co., 1011-19 W. Lafayette Blvd., Detroit, Mich. "F-N."

Holden Mfg. Co., 409 N. Franklin Ave., St. Paul, Minn.

Peerblow Mfg. Co., Leetsdale, Pa. "Restezy."

Restezy—See Peerblow Mfg. Co.

Standard Metal Mfg. Co., 237 Chestnut St., Newark, N. J. "Weed."

Weed—See Standard Metal Mfg. Co.

RESTS or RAILS, Foot

(See also Hassocks; For heated foot rests—See Heaters, Automobile)

Aetna Brass & Bronze Co., 1631-35 E. 55th St., Cleveland, O.

Allen Fire Department Supply Co., Providence, R. I.

Amesbury Brass & Foundry Co., Amesbury, Mass.

Attwood Brass Works, Grand Rapids, Mich. (See page 1195.)

Badger Mfg. Corp., Milwaukee, Wis. (See page 173.)

Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O.

Columbus Brass Co., 540 Dublin Ave., Columbus, O.

Cowles & Co., C., New Haven, Conn. (See page 651.)

Cox Brass Mfg. Co., Albany, N. Y. (See page 261.)

Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.

Enterprise Brass & Plating Co., Sixth & Baymiller Sts., Cincinnati, O.

Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 174 and 175.)

Highton & Sons Co., Wm., Nashua, N. H.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Jonah & George, Little's Ct., Merrimac, Mass.

Keeler Brass Co., 251-71 Godfrey Ave., Grand Rapids, Mich.

Meyer Scale & Hardware Co., 328 Adams St., Newark, N. J.

Moline Iron Works, Moline, Ill. (See page 601.)

Monarch Carriage Goods Co., Cincinnati, Ohio. (See page 407.)

Pfau Mfg. Co., Cincinnati, O.

Pollak Tool & Stamping Co., Joseph, 31-35 Freeport St., Boston, Mass.

Rich Mfg. Co., 1777 Broadway, New York, N. Y. "Rico." (See page 1223.)

Rico—See Rich Mfg. Co.

Rostand Mfg. Co., Milford, Conn.

Sargent Mfg. Co., New & Summit Sts., Newark, N. J.

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.

Spiro Mfg. Co., C., 68-72 E. 131st St., New York, N. Y.

Wagner Mfg. Co., E. R., North Milwaukee, Wis. (See page 905.)

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

White Mfg. Co., 155 Cannon St., Bridgeport, Conn.

Whitehouse Mfg. Co., 42 Elm St., Newark, N. J. (See page 637.)

Zenite Metal Co., 201-05 N. West St., Indianapolis, Ind. (See page 637.)

RESTS or RAILS, Foot, for Fords

(For heated rails—See Heaters, Automobile)

Attwood Brass Works, Grand Rapids, Mich. (See page 1195.)

Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.

Republic Auto Parts Co., 31-35 Tenth St., Long Island City, N. Y.

Spiro Mfg. Co., C., 68-72 E. 131st St., New York, N. Y.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

RETAINERS, Ball

Bearings Co. of America, Lancaster, Pa. "Stor." (See page 161.)

Bossert Corp., Utica, N. Y. (See page 897.)

Goodrich-Lenhart Mfg. Co., Hamburg, Pa. (See page 721.)

National Bearings Co., 637 Lancaster Ave., Lancaster, Pa.

S-W-S Co., Minneapolis, Minn. (See page 467.)

Star—See Bearings Co. of America.

Worcester Pressed Steel Co., Worcester, Mass. (See page 919.)

RETAINERS, BELT, FOR FORDS—See Guides, Fan Belt

RETAINERS, FAN BELT, FOR FORDS—See Guides, Fan Belt

RETAINERS, GREASE, FOR FORDS—See Retainers, Rear Axle Grease

RETAINERS, Rear Axle Grease, for Fords

(For preventing leakage of grease from rear axle on to brakes, wheels or tires)

Apex Mfg. Co., 1903-05 Locust St., St. Louis Mo. "Kant-Leek."

C. & M.—See Sells & Co., O. P.

Cantrell-Miller Machine Works—See Sells & Co.

H. & D. Co., Crawfordsville, Ind. (See page 959.)

Kant-Leek—See Apex Mfg. Co.

Korex Mfg. Co., 422 Larkin St., San Francisco, Cal.

Perfection Machine Co., Jeromeville, O.

Sells & Co., O. P., 1834 Broadway, New York N. Y. (Sole Distributors for Cantrell-Miller Machine Works, San Francisco, Cal.) "C. & M."

Shurnuff Mfg. Co., 3126 Locust St., St. Louis Mo.

Worthington, A. P., 100 N. Main St., Los Angeles, Cal.

RETAINING RINGS—See Fillers, Tire Bead

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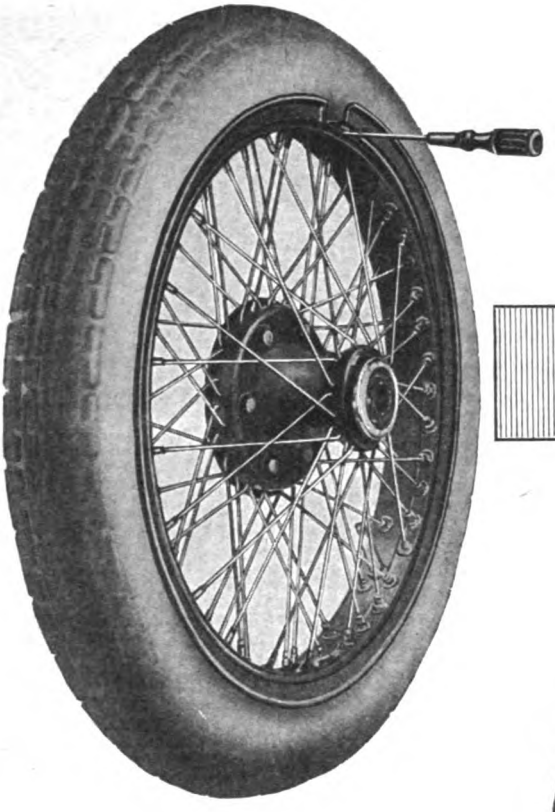

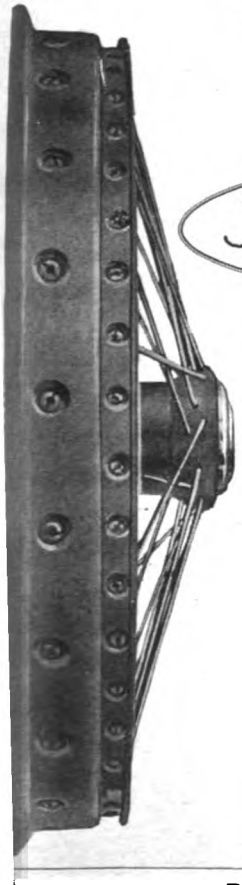

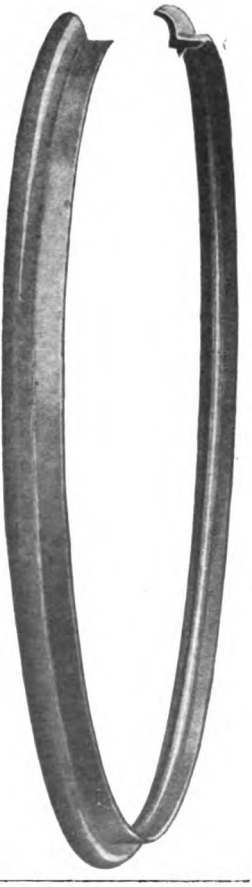

Johnson Rims

For Wire, Wood and Disk Wheels

Tire Changing Is Easy — with Johnson Rims. No Wrench. No Hammer. No Spreaders. No Effort.

Just use a screwdriver—pry one end of ring loose, remove ring, and tire comes off as easy as picking it up from the floor. Johnson Rims are rustproof—

Replacing tire is equally easy.

Johnson Rims, laced into wire wheels can be secured from all prominent wire wheel manufacturers.

JOHNSON RIM AND PARTS CO., Inc.

BUFFALO, N. Y.

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RETARDERS, Automatic Spark, for Fords

(Device to automatically retard spark when starting crank is engaged or to prevent engagement of crank until spark has been retarded)

Kant Kick Spark Set Co., Elkhorn, Wis.

Safety Spark Set Co., Elkhorn, Wis.

RETHREADING TOOLS—See Tools, Tire Valve Rethreading

REVERSE CURRENT CUTOUTS—See Cutouts, Reverse Current

REVERSE GEARS, MOTOR BOAT—See Gears, Motor Boat Reverse

REVERSING PROPELLER WHEELS, MOTOR BOAT—See Wheels, Motor Boat Reversing

REVOLUTION COUNTERS—See Counters, Revolution

RHEOSTATS, Battery Charging

Allen-Bradley Co., 284 Greenfield Ave., Milwaukee, Wis.

Cutler Hammer Mfg. Co., 890 St. Paul Ave., Milwaukee, Wis.

Electric Products Co., Cleveland, O. (See page 385.)

General Electric Co., Schenectady, N. Y. (See page 793.)

H-B—See Hobart Bros. Co.

Hobart Bros. Co., Box C 103, Troy, O. "H-B." (See page 387.)

I-C—See Industrial Controller Co.

Industrial Controller Co., 886 Greenbush St., Milwaukee, Wis. "I-C."

Leonard Electric Co., Ward, Mt. Vernon, N. Y.

National Electric Controller Co., 154-56 Whiting St., Chicago, Ill.

Schaefer Bros., 1059 W. 11th St., Chicago, Ill.

Shonts Co., H. B., 157 W. 54th St., New York, N. Y. (Dealers.) (See page 733.)

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

RIBS, AIRPLANE—See Parts, Airplane Wood

RIM APPLYING PRESSES—See Presses, Truck Rim Applying

RIM BOLTS—See Bolts, Special Demountable Rim

RIM CONTRACTING TOOLS—See Tools, Demountable Rim Contracting

RIM COVERS—See Covers, Cork Pulley Rim

RIM ENAMELS—See Paints, Rim; also Paints, Aluminum and Bronze

RIM EXPANDERS—See Tools, Demountable Rim Contracting

RIM PAINTS—See Paints, Rim

RIM SHIMS—See Plates, Demountable Rim Wedge

RIM REMOVING TOOLS—See Tools, Demountable Rim Contracting

RIM SPREADERS—See Tools, Demountable Rim Contracting

RIM TOOLS—See Tools, Demountable Rim Contracting

RIM WEDGE PLATES—See Plates, Demountable Rim Wedge

RIMS, Airplane Wheel

Cleveland Welding & Mfg. Co., of the Hydraulic Steel Co., Berea Rd. & W. 117th St., Cleveland, O. (See page 831.)

Williams Steel Wheel & Rim Co., Pleasant St. & N. Y., O. & W. R. R., Utica, N. Y.

RIMS, Demountable

Asch and Co., Inc., 16-24 W. 61st, New York, N. Y. (Eastern and Southern Distributors for "Funk" and "Quality" Rims; also "Spee Dee" Rims.) (See page 275.)

Auto Collapsible Rim Mfg. Co., 207 S. Madison Ave., Peoria, Ill.

Baker—See Stone Mfg. Co.

Chicago Wheel & Rim Co., 2010 S. Wabash Ave., Chicago, Ill. (Dealers.) (See pages 808 and 809.)

Cleveland Welding & Mfg. Co. of the Hydraulic Steel Co., Berea Rd. & W. 117th St., Cleveland, O. "Goodyear." (See page 831.)

Colton Demountable Rim Corp., 23 Water St., New York, N. Y. (See page 933.)

Copithorn Mfg. Co., 80 Boylston St., Boston, Mass.

Dahl Punctureless Filler & Rim Co., 1424-26 Hennepin Ave., Minneapolis, Minn.

Daly Co., Marsh Strong Bldg., Los Angeles, Cal.

Darco—See Divided Auto Rim Co.

Divided Auto Rim Co., 350 Broadway, New York, N. Y. "Darco."

Dressel Collapsible Rim Mfg. Co., 5156-58 Delmar Ave, St. Louis, Mo.

Firestone Steel Products Co., Miller St. & Sweitzer Ave., Akron, Ohio.

Funk—See Mott Wheel Works.

Goodyear—See Cleveland Welding & Mfg. Co.

Heward Demountable Rim Co., 1850 E. State St., Trenton, N. J.

Jaxon Steel Products Co., Jackson, Mich.

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Oliver Rim Co., Atlanta, Ga.)

Johnson Rim & Parts Co., Buffalo, N. Y. (See page 805.

Kelsey Wheel Co., Detroit, Mich. (See page 1063.)

Lightning Rim Corp., 303 W. 57th St., New York, N. Y.

Lightning Change Rim Co., Masonic Temple, Chicago, Ill.

Michelin Tire Co., Milltown, N. J.

Motor Rim Manufacturers Co., Chester Ave. & E. 24th St., Cleveland, O. (Dealers.) (See page 833.)

Mott Wheel Works, Jackson, Mich. "Quality." "Funk."

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THE STONE MFG. CO.

1502 Michigan Ave. CHICAGO, ILLINOIS

The "S. I." Rim

makes your rim problems simple—

BECAUSE

It is made to fit from 70% to 80% of all cars now in use without a solitary change.

If you sell the S. I. RIM you can give the most service on the least investment.

One rim of each size will be an 80% complete stock.

Made in the following sizes:

30x3½	Cl.	$3.30
32x3½	SS.	4.65
32x4	SS.	5.00
33x4	SS.	5.25
34x4	SS.	5.60
34x4½	SS.	6.60

Write for Complete Information

The Stone Interchangeable Rim

is made to replace and interchange with the following rims:

Kelsey No. 20 and 30
Stanweld No. 21, 22 and 76
Baker Standardized
Dodge T41
Perlman-Jackson
Baker
Detroit

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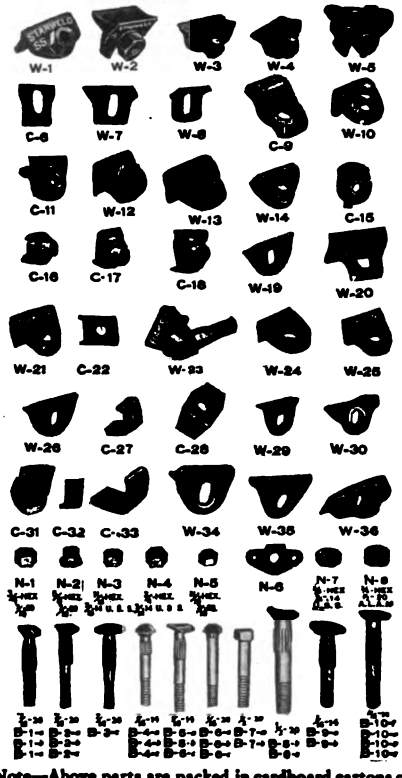
--RIMS AND

ALL TYPES OF RIMS AND RIM PARTS CARRIED I
LARGE AND COMPLETE STOCK AT WAREHOUSE

WEDGES AND PARTS FOR ALL MAKES OF RIMS



Note—Above parts are packed in cardboard cartons containing 12 each. Order by dozen or gross. Also packed in boxes containing 250 each bulk.

STANDARDIZED BAKER RIM

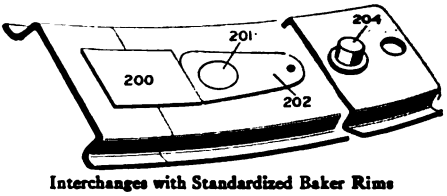
BAKER
Standardized Baker Substitutes for Baker and Detroit Rims Shown

STANWELD RIMS

No. 22 S. S. No. 22 Cl.

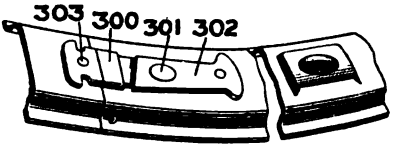
This rim also substitutes for Continental No. 1 rim.

STANDARDIZED STANWELD No. 76

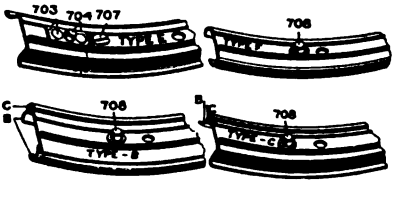


Interchanges with Standardized Baker Rims

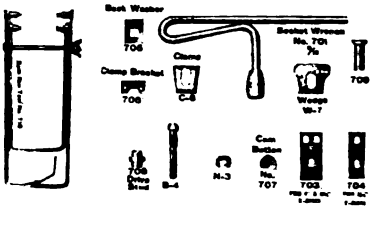
PERLMAN JAXON RIMS



FIRESTONE RIMS



ACCESSORIES



SEND FOR COMPLETE RIM AND

WESTERN DISTRIBUTOR
CHICAGO WHEEL AND RIM CO.
CHICAGO 2010 South Wabash Avenue ILLINOIS

MID-WESTERN
MOTOR RIM MAN
CLEVELAND

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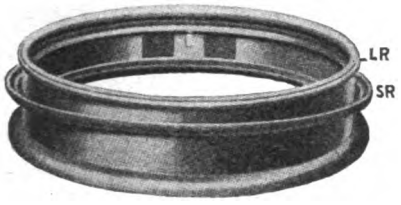
VHEELS--

OCK AT DISTRIBUTING POINTS GIVEN BELOW
AKE IMMEDIATE SERVICE ASSURED

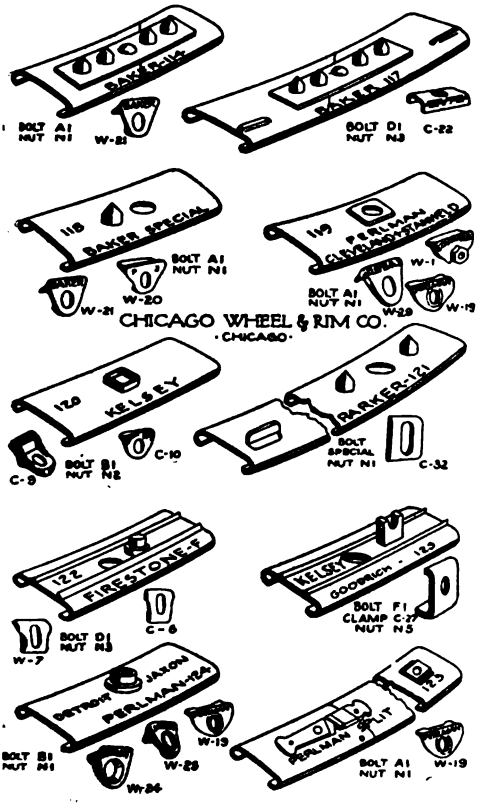
GIANT PNEUMATIC DEMOUNTABLE TRUCK RIMS

KELSEY—FIRESTONE—GOODYEAR
ALL SIZES



30x3½ CLINCHER DEMOUNTABLE RIMS

Used for Fords and Other Light Cars

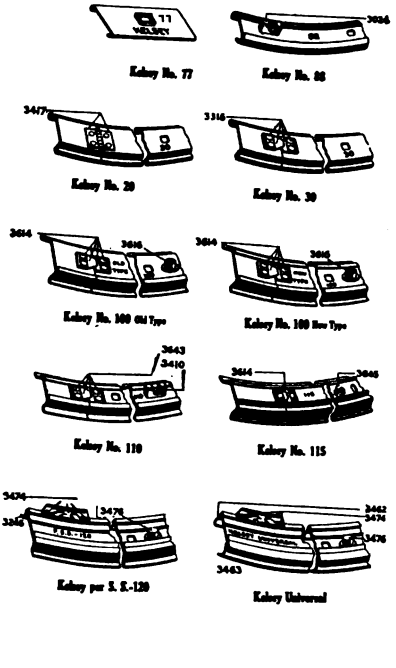


FORD DEMOUNTABLE SETS

Painted Black or Natural Wood Varnished

Set Consists of Four Wheels Five Rims, Wrench and Hub Bolts

KELSEY RIMS (All Types)



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CTURERS CO.
OHIO

EASTERN DISTRIBUTOR
JACOB MATTERN AND SONS
NEW YORK CITY 53rd & Broadway NEW YORK

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RIMS, Demountable (Continued)

Oliver Rim Co.—See Jonas, C. N. & F. W.
Parker—See Union Steel Products Co.
Presto Inter-Rim Co., 940 Commonwealth Ave., Boston, Mass.
Quality—See Mott Wheel Works.
Raymond Rim & Wheel Co., Sun Bldg., Jackson, Mich.
S & I—See Stone Mfg. Co.
Spee-Dee—See Spencer Metal Products Co.
Spencer Metal Products Co., Spencer, O, "Spee-Dee." (See page 766.)
Standard Rim Corp., 1482 Broadway, New York, N. Y. (See page 1153.)
Standard Welding Co., Cleveland, O. "Stanweld." (See page 1149.)
Stanweld—See Standard Welding Co.
Stone Mfg. Co., 1502 Michigan Ave., Chicago, Ill. "Baker," "S & I." (See page 807.)
Union Steel Products Co., Berrien & Pine Sts., Albion, Mich. "Parker."

RIMS, Demountable, for Fords

Baker—See Stone Mfg. Co.
Daly Co., Marsh Strong Bldg., Los Angeles, Cal.
Dressel Collapsible Rim Mfg. Co., 5156-58 Delmar Ave., St. Louis, Mo.
Howard Demountable Rim Co., 1850 E. State St., Trenton, N. J.
Johnson Rim & Parts Co., Buffalo, N. Y. (See page 805.)
S & I—See Stone Mfg. Co.
Stone Mfg. Co., 1502 Michigan Ave., Chicago, Ill. "Baker," "S & I." (See page 807.)

RIMS, DETACHABLE—See Rims, Quick Detachable

RIMS, Emergency, for Fords

Twin-Rim Co., Everett, Mass.

RIMS, Motorcycle Wheel

Asch and Co., Inc., 16-24 W. 61st, New York, N. Y. (Eastern and Southern Distributors for Mott Rims.) (See page 275.)
Grant Wire Wheel Mfg. Co., 865 W. North Ave., Chicago, Ill.
Mott Wheel Works, Jackson, Mich.
Williams Steel Wheel & Rim Co., Pleasant St. & N. Y., O. & W. R. R., Utica, N. Y.

RIMS, Quick Detachable

Asch and Co., Inc., 16-24 W. 61st, New York, N. Y. (Eastern and Southern Distributors for Mott Rims.) (See page 275.)
Chicago Wheel & Rim Co., 2010 S. Wabash Ave., Chicago, Ill. (Dealers.) (See pages 808 and 809.)
Johnson Rim & Parts Co., Buffalo, N. Y. (See page 805.)
Kelsey Wheel Co., Detroit, Mich. (See page 1063.)
Motor Rim Manufacturers Co., Chester Ave. & E. 24th St., Cleveland, O. (Dealers.) (See page 833.)
Mott Wheel Works, Jackson, Mich.
Quick & Easy—See Wheel & Rim Works Corp.
Standard Welding Co., Cleveland, O. "Stanweld." (See page 1149.)
Stanweld—See Standard Welding Co.
Wheel & Rim Works Corp., 110 S. Dearborn St., Chicago, Ill. "Quick & Easy."

RIMS, REMOVABLE—See Rims, Demountable

RIMS, Rubber or Composition Steering Wheel

(For complete steering wheels—See Wheels, Steering)

General Insulate Co., 1008 Atlantic Ave., Brooklyn, N. Y.
Luzerne Rubber Co., Muirhead Ave., Trenton, N. J.
Stokes Rubber Co., Jos., Taylor St., Trenton, N. J.

RIMS, Standard

Asch and Co., Inc., 16-24 W. 61st, New York, N. Y. (Eastern and Southern Distributors for Mott Rims.) (See page 275.)
Kelsey Wheel Co., Detroit, Mich. (See page 1063.)
Mott Wheel Works, Jackson, Mich.
Standard Welding Co., Cleveland, O. "Stanweld." (See page 1149.)
Stanweld—See Standard Welding Co.
Stone Mfg. Co., 1502 Michigan Ave., Chicago, Ill. (See page 807.)
Williams Steel Wheel & Rim Co., Pleasant St. & N. Y., O. & S. W. R. R., Utica, N. Y.

RIMS, STEERING WHEEL—See Rims, Rubber Steering Wheel; also Rims, Wood Steering Wheel

RIMS, Supplementary

(Special Rim to permit the use of old tire casing over the regular casing)

Usold Tire Corp., Plymouth Bldg., Cleveland, O.

RIMS, TRACTION—See Bands, Non-Skid Truck

RIMS, Wood Steering Wheel

(For complete steering wheels—See Wheels, Steering)

Allerding Products Co., 209 N. Main St., Mansfield, O.
American Wood Rim Co., Onaway, Mich.
Haberkorn & Co., C. H., 1331 W. Elizabeth St., Detroit, Mich.
LA Pierre & Co., H. M. (Dudie), 1314-16 W. 21st St., Chicago, Ill. (See page 811.)
Rastetter & Sons, Louis, Nelson & Wall Sts., Fort Wayne, Ind.
Wayne Steering Wheel & Bow Co., Wayne, Mich.

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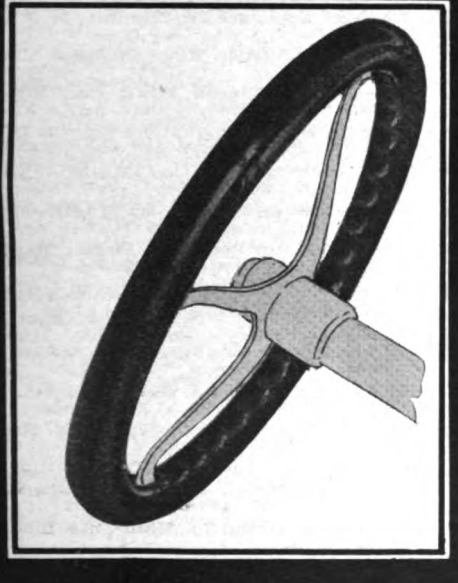
LA PIERRE STEERING WHEEL RIMS



In them are found that superior standard of design, high quality of materials and expert workmanship which insures safety, durability, economy, and service.

Every LA PIERRE Rim is conscientiously guaranteed because the LA PIERRE system of inspection gives a perfect knowledge of the Rim before it leaves the factory.

Specify LA PIERRE and insist on having the genuine.

Established 1890

H. M. ("Dudie") LA PIERRE & CO.

MAIN OFFICES
1314-16 W. 21st St.

MAIN WORKS
2015-21 So. Loomis St.

CHICAGO, ILL.

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RIMS or Felloes, Wood

Campbell & Dann Mfg. Co., Tullahoma, Tenn.
Columbus Bending Co., Columbus, O.
Crane & MacMahon, St. Marys, O. "Nut," "Star."
Eberly & Orris Mfg. Co., Mechanicsburg, Pa.
Hartwell Handle Co., 146th & Lincoln Sts., Harvey, Ill.
Jones & Co., Phineas, 305 Market St., Newark, N. J.
Lebzelter & Son Co., Philip, 241 N. Queen St., Lancaster, Pa.
Nut—See Crane & MacMahon.
Skeens Empire Bending Works, 114 S. Christian St., Lancaster, Pa.
Skinner Bending Co., J. M., Broadway & Wabash R. R., Toledo, O.
Star—See Crane & MacMahon.

RING GAGES—See Gages, Plug and Ring

RING GEARS—See Gears, Steel Ring

RING GRINDERS—See Grinders, Piston Ring

RING GROOVE CLEANING TOOLS—See Tools, Piston Ring Groove Cleaning.

RING TOOLS—See Tools, Piston Ring

RINGS, DUST—See Washers, Felt

RINGS, Piston

(See also Machine Work; also Cylinder, Regrinding of)

A. C. Non-Leakable Piston Ring Co., Compton, Ill.
Acme—See Kauffman Engineering Co.
Albertson & Co.—See Jonas, C. N. & F. W.
Alloyanum—See Miller Engineering & Foundry Works.
Amelung Mfg. Co., A. F., First St., Sanborn, Ia. "Can't Leak."
American Distributing Co., Kresge Bldg., Detroit, Mich. (Sole Distributors for American Metal Parts Corp., Boston, Mass. "Precision.")
American Hammered Piston Ring Co., Baltimore, Md. (See page 815.)
American Metal Parts Corp.—See American Distributing Co.
Arizona Machinery Mfg. Co., 222-26 N. Seventh St., Phoenix, Ariz.
Asch and Co., Inc., 16-24 W. 61st, New York, N. Y. (Eastern and Southern Distributors for "Sioux" Rings.) (See page 275.)
Auto Engine Works, University Ave. & Griggs St., St. Paul, Minn.
B-W.—See Ballman-Whitten Mfg. Co.
Bailey-Drake Co., 1120 S. Michigan Ave., Chicago, Ill. (Sole Distributors for Trione Mfg. Co., St. Louis, Mo.)
Blettner, Geo. H., 1401-05 Jackson Blvd., Chicago, Ill.
Bridgeport Piston Ring Co., Connecticut Ave. & Third St., Bridgeport, Conn.
Buffalo Cylinder Grinding Co., 887 Main St., Buffalo, N. Y.
Buffalo Piston Ring Co., Builders Exchange, Buffalo, N. Y.
Bull Dog—See Steel Spring Piston Ring Co.
Bu-Nite—See Butler Mfg. Co.
Burd High Compression Ring Co., Rockford, Ill.
Butler Mfg. Co., 3234 W. Washington St., Indianapolis, Ind. "Bu-Nite."
Canton Auto Parts Mfg. Co., Canton, O. "Kurtz." (See page 827.)
Can't Leak—See Amelung Mfg. Co.
Carbon-O—See Steam Tractor Auto Mfg. Co.
Chance Co., Centralia, Mo. "Gas-Tite."
Chopa Piston Ring Co., 404-06 E. Jefferson Ave., Detroit, Mich.
Cloud Accessories Corp., 1408 S. Wabash Ave., Chicago, Ill.
Club Auto Parts & Machine Co., 204-06 Center St., Buffalo, N. Y.
Commerce Steel Products Co., 721 Otis Bldg., Chicago, Ill.
Continental Piston Ring Co., 648-50 Marshall Ave., Memphis, Tenn. "Hi-Comp," "Hi-Speed."
D. & M. Auto Parts Co., 1003 N. E. St., Richmond, Ind. "Domor."
Davidson Multiple Piston Ring Co., 227 W. 64th St., New York, N. Y.
Detroit Piston Ring Co., Richmond & Custer, Detroit, Mich. (See page 1083.)
Domor—See D. & M. Auto Parts Co.
Double Seal Ring Co., 1517 S. Michigan Ave., Chicago, Ill. (See page 875.)
De Luxe—See Ingram Motor Co.
Eclipse—See Hope Machine Co.
Eco Mfg. Co., 53 State St., Boston, Mass. "Numethod." (See page 879.)
Efemco—See Foster, Merriam & Co.
End-Oxy Appliance Co., Trenton, N. J. "Leektite."
Endurance Piston Ring Co.—See Jessop & Thompson.
Ever Tight Piston Ring Co., St. Louis, Mo. "Ever-Tyte." (See page 873.)
Ever-Tyte—See Ever-Tight Piston Ring Co.
F. W. S.—See Stewart Mfg. Co.
Fore Electrical Mfg. Co., 5255 N. Market St., St. Louis, Mo.
Foster, Merriam & Co., Meriden, Conn. "Efemco," "Ful-A-Pep." (See page 831.)
Frank Motor Products Corp., Richmond Hill, N. Y. (See page 923.)
Ful-A-Pep—See Foster, Merriam & Co.
Gas-Tite—See Chance Co.
General Utility Co., Stock Exchange Bldg., Philadelphia, Pa. "Lightning." (See page 289.)
Gill Mfg. Co., 8301 S. Chicago Ave., Chicago, Ill. (See page 813 and 814.)
Goshen Specialty Co., 211-13 S. Main St., Goshen, Ind. "Z. E."
Gra-Seal—See Universal Piston Ring Co.
Gray-Heath Co., 1440 S. Michigan Ave., Chicago, Ill. (See page 741.)
Green Engineering Co., Main St. & Burns Ave., Dayton, O.
Grundy Mfg. Corp., 697 Beaufait Ave., Detroit, Mich. "Permaseal." (See page 821.)
H & S—See Hangliter & Storrs.
Hall Machine & Tool Co., 116 Chestnut St., Providence, R. I.
Hangliter & Storrs, 983 S. Raymond Ave., Pasadena, Cal. "H & S."
Harward Mfg. Co., 3939 Magnolia Ave., St. Louis, Mo.
Hebert Mfg. Co., 575 Central St., Franklin, N. H.
Hi-Comp—See Continental Piston Ring Co.
Hi-Speed—See Continental Piston Ring Co.
Higginson-Gibson Mfg. Co., 76 Atherton St. (Jamaica Plain), Boston, Mass. "Titan."
Hope Machine Co., 2210-12 N. Second St., Philadelphia, Pa. "Eclipse."
Houpert Machine Co., Harris Ave. & Marion St., Long Island City, N. Y. (See page 707.)
Ingram Motors Co., 1041-D Bay St., Rosebank, S. I., N. Y. (See page 827.)

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Gill

One-Piece Piston Ring

Any Size, *Where* You Want It, and *When* You Want It.

The thirty-three branch offices of this company are so located that no jobber in America is more than twenty-four hours from some one of them.

And since these branch offices carry complete stocks of, or can supply Gill One-Piece Piston Rings in more than 3,000 sizes and over-sizes, it means that your customers can have Gill Piston Rings in *any* size they want, *where* they want them, and *when* they want them.

THE GILL MANUFACTURING COMPANY
Chicago, Illinois

Identify the Gill One-Piece Piston Ring by the Joint, but do not measure its merit by the joint *alone*.

POWER

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Gill

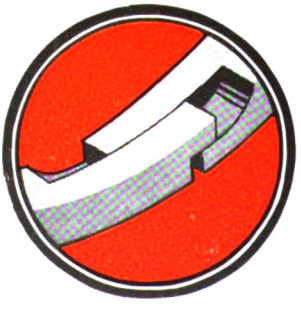
One-Piece Piston Rings

are carried in stock ranging from 500 to 10,000 rings each, by nearly all jobbers. If your jobber happens to be out of the size you want, tell him to get in touch with the nearest of these branch offices—The Gill Piston Ring Company:

	AT
Atlanta, Ga.	25-27 Nassau St.
Baltimore, Md.	623 W. North Avenue
Birmingham, Ala.	421 S. 20th Street
Brooklyn, N. Y.	1111 Bedford Ave.
Boston, Mass.	93 Massachusetts Ave.
Columbus, Ohio	36 East Gay Street
Chicago, Ill.	2133 So. Michigan Ave.
Cincinnati, Ohio	37 West 6th Street
Cleveland, Ohio	1907 Euclid Avenue
Charlotte, N. C.	Box 83
Dallas, Texas	2029 Main Street
Denver, Colo.	1571 Broadway
Des Moines, Iowa	1301 Locust St.
Detroit, Mich.	846 Woodward Avenue
Helena, Mont.	7 Placer Avenue
Indianapolis, Ind.	646 N. Meridian Street
Kansas City, Mo.	205 East 18th Street
Los Angeles, Calif.	1522 So. Grand Avenue
Minneapolis, Minn.	1104 Hennepin Avenue
Milwaukee, Wis.	205 Second Street
Memphis, Tenn.	247 Poplar Street
New Orleans, La.	857 Carondelet Street
New York, N. Y.	1864 Broadway
Omaha, Neb.	1923 Farnham Street
Pittsburgh, Pa	5911 Baum Boulevard
Philadelphia, Pa.	824 North Broad Street
Portland, Ore.	409 Burnside Street W.
Richmond, Va.	214 N. Adams Street
Salt Lake City, Utah	25 East Fourth St., South
San Francisco, Calif.	803 Van Ness Avenue
St. Louis, Mo.	3126 Locust Street
Seattle, Wash.	723 Pike Street, East
Tulsa, Okla.	11 West 6th Street

We guarantee Gill Rings to increase power, prevent smoking resulting from oil suction, to overcome excessive carbon trouble, and to reduce gasoline and oil consumption. When the motor is fully equipped with Gill Piston Rings we will refund the full purchase price upon return of rings, if they fail to meet this guarantee. This guarantee does not cover rings used in scored or out-of-round cylinders until they have been reground.

THE GILL MANUFACTURING COMPANY
8300 South Chicago Avenue, Chicago, Illinois
Canadian Manufacturer:
Brown Engineering Corporation
Toronto, Ontario
Sole Export Agents:
Automotive Products Corporation
Woolworth Building, New York, N. Y.



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American *Hammered* Piston Rings

INDIVIDUALLY CAST AND TESTED—From special mixture of close grained gray iron, accurately tested, assuring uniform metal in every ring.

ONE PIECE—Easily installed—and not subject to the high breakage of multiple piece rings.

CONCENTRIC—An equal wall thickness at all points of the circumference allows the ring to fill the piston groove and leave no pocket behind the ring for oil accumulation and carbon deposits.

LEAKLESS—Accurately machined to fit the piston groove and cylinder—American Hammered Piston Rings are **leakless.** The tension, **hammered** into the rings uniformly, keeps them leakless. Heat from the motor does not affect American Hammered Piston Rings.

OVERSIZE—No extra charge for oversize rings. In ordering always give the diameter and width of rings wanted.

SEALED CONTAINER—Every ring is sealed in a moisture proof envelope, 12 to a box. The box is also sealed, giving a double assurance that every ring will be received in good condition.

★ SPECIAL FOR FORDS—American Hammered Piston Rings, made to fit the deep grooves in a Ford piston, are held to the same rigid specifications as those used as factory equipment for Pierce-Arrow, Mercer, Stutz, and other of the more expensive cars. In ordering these special rings, please specify "for Fords."

FOR ALL MOTORS—American Hammered Piston Rings for all makes and sizes of motorcycle, automobile, truck, tractor, marine and stationary engines, supplied on your order. Rings for replacement are subject to the same rigid inspection as those furnished to the highest class of motor manufacturers as factory equipment.

List Price

DIAMETER	Width		
Also 5, 10, 20, 30 and 60 thousandths oversize in diameter	3/16"	1/4"	5/16"
	Also widths of 5/32", 7/32", 9/32" and 3/8" when specified.		
2½", 2⅝", 2¾", 2 13/16", 2⅞", 3", 3⅛", 3¼", 3⅜", 3½", 3⅝", 3 11/16", 3¾", ★3¾", 3⅞"	$1.00		¼" (Special wall thickness .136"—150") FORD
4", 4⅛", 4¼", 4⅜", 4½", 4⅝", 4¾", 4⅞"	$1.25		
5", 5⅛", 5¼", 5⅜", 5½", 5⅝", 5¾", 5⅞"	$1.50		
6", 6⅛", 6¼", 6⅜", 6½", 6⅝", 6¾", 6⅞"	$2.25		
7", 7¼", 7½", 7¾", 8"	$2.75		

No extra charge for oversize rings.

★ For Fords

$9.00

Per Set of 12

American Hammered Piston Ring Company

Baltimore, Maryland

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RINGS, Piston (Continued)

Indiana Piston Ring Co., Hagerstown, Ind. "Teetor." (See page 1223.)

Jessop & Thompson, 1421 S. Michigan Ave., Chicago, Ill. (Sole Distributors for Endurance Piston Ring Co., Belleville, Ill.)

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Albertson & Co., Sioux City, Ia.) "Sioux."

K. H. K.—See Kay Co.

K-P—See Keys Piston Ring Co.

Kant-Leek—See Kauffman Engineering Co.

Kauffman Engineering Co., 3951-53 Laclede Ave., St. Louis, Mo. "Acme," "Kant Leek."

Kay Co., Kay H., 967 Woodward Ave., Detroit, Mich. "K H K." (See pages 83 and 869.)

Kelly—See Seal-Tite Piston Ring Co.

Kelly Piston Ring Co., 1900-04 Third St., N. E., Minneapolis, Minn. (See page 817.)

Keys Piston Ring Co., 3020 Olive St., St. Louis, Mo. "K-P." (See page 1185.)

Krasberg Piston Ring Works, 536 Lake Shore Drive, Chicago, Ill. "V-Plex."

Kurts—See Canton Auto Parts Mfg. Co.

Lake Sales Co., 1947 Broadway, New York, N. Y. (Sole Distributors for Wasson Piston Ring Co., Plainfield, N. J.) (See page 825.)

Leak-Proof—See McQuay-Norris Mfg. Co.

Leektite—See End-Oxy Appliance Co.

Lightning—See General Utility Co.

McCaddenn Machine Works, 316 Sixth Ave., N., St. Cloud, Minn.

McQuay-Norris Mfg. Co., 2808 Locust St., St. Louis, Mo. "Leak-Proof," "Superoyl."

Master—See Schramm & Bursch Mfg. Co.

Merritt Co., S. Whyle, 516 Fifth Ave., New York, N. Y.

Micro Piston Ring Co., 116 Nassau St., New York, N. Y.

Miles Piston Ring Co., Chicago, Ill. (See page 1151.)

Miller Engineering & Foundry Works, 2652 Long Beach Ave., Los Angeles, Cal. "Alloyanum."

Modern Electric & Machine Co., 326-40 Fort Wayne Ave., Indianapolis, Ind. "R. & M. Conform."

Moore Co., D. Kirke, Cleveland O. (Sole Sales Agent for American Metals Parts Corp., Boston, Mass.) "Precision."

Munger—See Splitdorf Electrical Co.

Neupert Mfg. Co., 82 Lark St., Buffalo, N. Y. (See page 341.)

Nilson-Miller Co., 1300-06 Hudson St., Hoboken, N. J. "Prossen Flexo."

No-Leak-O Piston Ring Co., Baltimore, Md. (See page 831.)

Numethod—See Eco Mfg. Co.

Oiledge—See Seal-Tite Piston Ring Co.

Orem Motor Protector Co., 2827 N. Calvert St., Baltimore, Md.

Otter Mfg. Co., 243 W. 17th St., New York, N. Y. "Super."

P. R. Piston Ring Co., Eau Claire, Wis.

Pedrick True-Fit—See Wilkening Mfg. Co.

Peerless Piston Ring Co., 3848-50 N. Clark St., Chicago, Ill.

Pennsylvania Piston Ring Co., 203-05 St. Clair Ave., N. E., Cleveland, O. "Pepco." (See page 1025.)

Pepco—See Pennsylvania Piston Ring Co.

Perfection Piston Ring Co., Ravenna, O. "Ultra Seal." (See page 821.)

Permaseal—See Grundy Mfg. Co.

Piston Ring Co., Muskegon, Mich. "Sta-Tite," "Quality." (See page 1047.)

Precision—See American Distributing Co.

Prescott Auto Parts Co., Webster, Mass. (See page 827.)

Pressure Proof Piston Ring Co., 107 Massachusetts Ave., Boston, Mass. (See page 1013.)

Prossen Flexo—See Nilson-Miller Co.

Quality—See Piston Ring Co.

R & M Conform—See Modern Electric & Machine Co.

Rainbow Coil Protector Co., 278 Jefferson Ave., E. Detroit, Mich.

Reus Bros. Co., 150-54 W. Mt. Royal Ave., Baltimore, Md.

Saginaw Metal Parts Corp., Williamson & River Sts., Saginaw, Mich. "Shur-Tite."

St. Louis Piston Ring Corp., 1807-11 S. Second St., St. Louis, Mo. "Tell-Tale."

Schaap Automobile Co., 344 Cumberland St., Brooklyn, N. Y. (See page 833.)

Schramm & Bursch Mfg. Co., 416 Broadway, New York, N. Y. "Master."

Seal-Tite Piston Ring Co., 1900-04 Third St., N. E., Minneapolis, Minn. "Oiledge."

Seymour Mfg. Corp., W. E., Lisbon Ave. & 31st St., Milwaukee, Wis.

Sioux—See Jonas, C. N. & F. W.

Spacke Machine & Tool Co., Indianapolis, Ind.

Splitdorf Electrical Co., 98 Warren St., Newark, N. J. "Munger."

Sta-Tite—See Piston Ring Co.

Standard Motor Products Co., 4345 E. 19th St., New York, N. Y.

Standard Piston Ring Co., 1306-16 Commonwealth Ave., Boston, Mass. "Shurfit."

Stark-Inland Machine Works, 1647 Locust St., St. Louis, Mo. (See page 1045.)

Steam Tractor Auto Mfg. Co., 219 W. Seventh St., Sioux City, Ia. "Carbon-O."

Steel Spring Piston Ring Co., 147 Metropolitan Ave., Brooklyn, N. Y. "Bull Dog." (See page 1153.)

Stevens & Co., 375 Broadway, New York, N. Y. "Non Set." (See page 1147.)

Stewart Mfg. Corp., F. W., 345 W. Austin Ave., Chicago, Ill. "F. W. S."

Super—See Otter Mfg. Co.

Superior—See White Machine Works.

Superoyl—See McQuay-Norris Mfg. Co.

Shurfit—See Standard Piston Ring Co.

Shur-Tite—See Saginaw Metal Parts Corp.

Teetor—See Indiana Piston Ring Co.

Tell-Tale—See St. Louis Piston Ring Corp.

Tenion—See Du Bois Piston Ring Co.

Tes-Tite Piston Ring Sales Co., Atlantic Ave., Freeport, N. Y.

Titan—See Higginson-Gibson Mfg. Co.

Trione Mfg. Co.—See Bailey-Drake Co.

Trindl Co., Wabash Ave. & 29th St., Chicago, Ill. (See page 341.)

Ultra Seal—See Perfection Piston Ring Co.

U. S. Hammered Piston Ring Co., 1206 S. Grove St., Irvington, N. J.

United States Piston Ring Co., 1206 S. Grove St., Irvington, N. J. (See page 1111.)

Universal Machine Co., 501-09 E. Preston St., Baltimore, Md.

Universal Machine Works, 3610 Enright Ave., St. Louis, Mo. (See pages 819 and 1143.)

Universal Piston Ring Co., 1426 Rock St., Rockford, Ill. "Gra-Seal." (See page 1125.)

V-Plex—See Krasberg Piston Ring Works.

Vapor Tight Ring Co., 1855 E. 28th St., Minneapolis, Minn.

Victory Hammered Piston Ring Co., 286 South St., Newark, N. J.

Wadell Motor Corp., 661-71 Freylinghuysen Ave., Newark, N. J.

Wainwright Engineering Corp., Connersville, Ind. (See page 705.)

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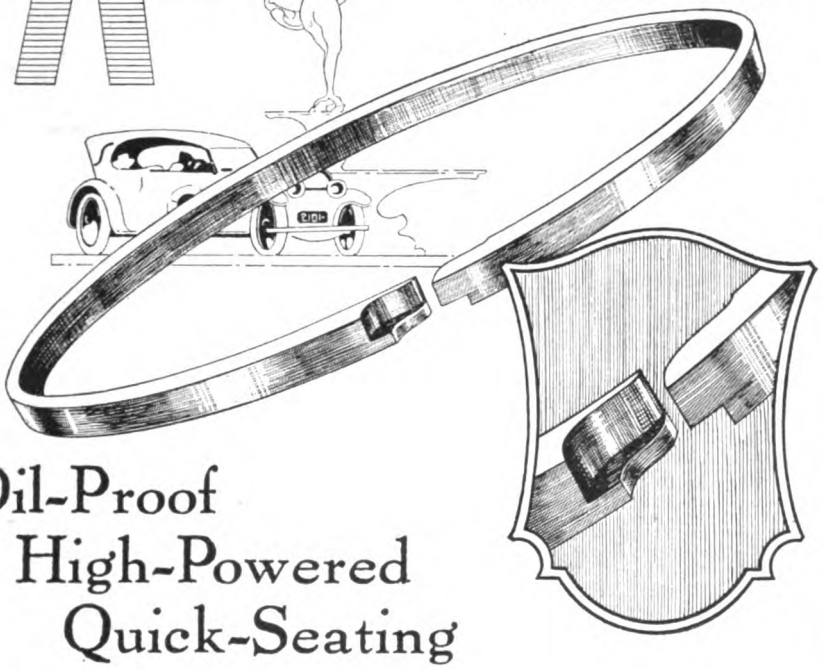
KELLY

ONE-PIECE PISTON RING



Oil-Proof High-Powered Quick-Seating

ANNOUNCING the—KELLY ONE-PIECE-piston ring, a new and better product—one that is based on sound engineering principles and has withstood every test under every trying condition, and found equal to all emergencies.

Manufactured by engineers with years of piston ring experience and who know the requirements and the need of a high grade piston ring and spare no expense to make the KELLY ONE-PIECE a quality product.

Sold by jobbers at a popular price on a money-back-guaranty.

KELLY PISTON RING CO.

1900-1904 Third St. N. E., Minneapolis, Minn., U. S. A.

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RINGS, Piston (Continued)

Wasson Piston Ring Co.—See Lake Sales Co.

Wedgerite Piston Ring Co., Plattsburg, N. Y.

Welever Piston Ring Co., 1713 Canton St., Toledo, O.

Whitcomb Machine Co., Monroe, Wis.

White Machine Works, A. E., Eau Claire, Wis. "Superior."

Wilkening Mfg. Co., Philadelphia, Pa. "Pedrick True-Fit." (See page 1157.)

Wilcox Motor & Mfg. Co., Saginaw, Mich. (See pages 823 and 1027.)

Yale Piston Ring Co., Myrtle Ave., Boonton, N. J.

Z. E.—See Goshen Specialty Co.

RINGS, Piston, for Fords

American Hammered Piston Ring Co., Baltimore, Md. (See page 815.)

Bemiller Foundry & Machine Co.—See Eckhouse & Co.

Bu-Nite—See Butler Mfg. Co.

Bull Dog—See Steel Spring Piston Ring Co.

Burd High Compression Ring Co., Rockford, Ill.

Butler Mfg. Co., 3234 W. Washington St., Indianapolis, Ind. "Bu-Nite."

Chance Co., Centralia, Mo. "Gas-Tite."

Chopa Piston Ring Co., 404-06 E. Jefferson Ave., Detroit, Mich.

Club Auto Parts & Machine Co., 204-06 Chester St., Buffalo, N. Y.

D. & M. Auto Parts Co., 1003 N. E. St., Richmond, Ind. "Domor."

Domor—See D. & M. Auto Parts Co.

Duplex—See Piston Ring Co.

Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Factory Distributors for Bemiller Foundry & Machine Co., Belleville, O.) (See page opposite Title Page.)

Eclipse—See Hope Machine Co.

Eco Mfg. Co., 53 State St., Boston, Mass. "Numethod." (See page 879.)

Efemco—See Foster, Merriam & Co.

Foster, Merriam & Co., Meriden, Conn. "Efemco," "Ful-A-Pep." (See page 821.)

Franklin Machine Co., Main St. Station, Franklin, N. H.

Ful-A-Pep—See Foster, Merriam & Co.

Gas-Tite—See Chance Co.

Gas-Tite—See Star Specialty Mfg. Co.

General Utility Co., Stock Exchange Bldg., Philadelphia, Pa. "Lightning." (See page 289.)

Grundy Mfg. Corp., 697 Beaufait Ave., Detroit, Mich. "Permaseal." (See page 821.)

Hangliter & Storrs, 983 S. Raymond Ave., Pasadena, Cal.

Hope Machine Co., 2310-12 N. Second St., Philadelphia, Pa. "Eclipse."

K-P—See Keys Piston Ring Co.

Kelly Piston Ring Co., 1900-04 Third St., N. E., Minneapolis, Minn. (See page 817.)

Keys Piston Ring Co., 3020 Olive St., St. Louis, Mo. "K-P." (See page 1185.)

Krasberg Piston Ring Works, 536 Lake Shore Drive, Chicago, Ill. "V-Plex."

Lake Sales Co., 1947 Broadway, New York, N. Y. (Sole Distributors for Wasson Piston Ring Co., Plainfield, N. J.) (See page 825.)

Leak-Proof—See McQuay-Norris Mfg. Co.

Lightning—See General Utility Co.

McQuay-Norris Mfg. Co., 2808 Locust St., St. Louis, Mo. "Leak-Proof," "Superoyl."

Micro Piston Ring Co., 116 Nassau St., New York, N. Y.

Miles Piston Ring Co., Chicago, Ill. (See page 1151.)

Modern Electric & Machine Co., 936-40 Fort Wayne Ave., Indianapolis, Ind. "R & M Conform."

Munger—See Splitdorf Electrical Co.

No-Leak-O Piston Ring Co., Baltimore, Md. (See page 831.)

Noonan Mfg. Co., D. R., Paris, Ill.

Numethod—See Eco Mfg. Co.

Oiledge—See Seal-Tite Piston Ring Co.

Orem Motor Protector Co., 2827 N. Calvert St., Baltimore, Md.

Pepco—See Pennsylvania Piston Ring Co.

Pennsylvania Piston Ring Co., 203-05 St. Clair Ave., N. E., Cleveland, O. "Pepco." (See page 1025.)

Permaseal—See Grundy Mfg. Corp.

Piston Ring Co., Muskegon, Mich. "Duplex." (See page 1047.)

R & M Conform—See Modern Electric & Machine Co.

S. & J. Motor Products Co., 53 E. Lafayette St., Detroit, Mich. (See page 825.)

Saginaw Metal Parts Corp., Williamson & River Sts., Saginaw, Mich "Shur-Tite."

St. Louis Piston Ring Corp., 1807-11 S. Second St., St. Louis, Mo. "Tell-Tale."

Seal-Tite Piston Ring Co., 1900-04 Third St., N. E., Minneapolis, Minn. "Oiledge."

Seymour Mfg. Corp., W. E., Lisbon Ave. & 31st St., Milwaukee, Wis.

Splitdorf Electrical Co., 98 Warren St., Newark, N. J. "Munger."

Staff, J. Wadsworth, 122 S. Michigan Blvd., Chicago, Ill. (Sole Distributor for Trump Mfg. Co., Crown Point, Ind.) (See pages 1177 and 1193.)

Standard Piston Ring Co., 1306-16 Commonwealth Ave., Boston, Mass. "Surefit."

Stark-Inland Machine Works, 1647 Locust St., St. Louis, Mo. (See page 1045.)

Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. "Gas-Tite." (See page 507.)

Steel Spring Piston Ring Co., 147 Metropolitan Ave., Brooklyn, N. Y. "Bull Dog." (See page 1153.)

Stevens & Co., 375 Broadway, New York, N. Y. (See page 1147.)

Superoyl—See McQuay-Norris Mfg. Co.

Surefit—See Standard Piston Ring Co.

Shur-Tite—See Saginaw Metal Parts Corp.

Tell-Tale—See St. Louis Piston Ring Corp.

Trump Mfg. Co.—See Staff, J. Wadsworth.

Universal Machine Co., 501-09 E. Preston St., Baltimore, Md.

Universal Machine Works, 3610 Enright Ave., St. Louis, Mo. (See pages 819 and 1143.)

V-Plex—See Krasberg Piston Ring Works.

Vapor Tight Ring Co., 1855 E. 28th St., Minneapolis, Minn.

Wasson Piston Ring Co.—See Lake Sales Co.

Yale Piston Ring Co., Myrtle Ave., Boonton, N. J.

RINGS, Piston Ring Expanding

(Spring ring designed to be placed under old piston ring to give increased pressure)

American Auto Products Co., 1319 L St., N. W., Washington, D. C. "Nu-Life."

Nu-Life—See American Auto Products Co.

RINGS, TIRE RETAINING—See Fillers, Tire Bead

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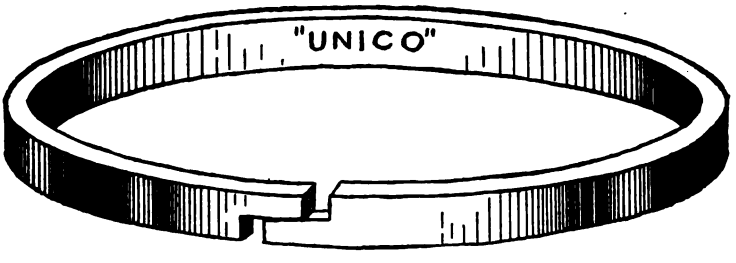
"UNICO"

PLAIN

PISTON RINGS



GUARANTEED 100 PER CENT PERFECT

LIGHT TIGHT

STEP CUT OR DIAGONAL CUT

These rings are perfectly light tight when put into a gauge.

Ground to within one-half thousandth in width.
Wall ground to within ten thousandths.

Perfect tight joint and as close on inside as on outside.

Made in all standard and oversizes.

Packed in cartons of one dozen, or wrapped in paper rolls containing 25 rings.

Specify and use "UNICO" Guaranteed Plain Rings

"HAVEN'T LEAKED YET"

Sales Department

WALTER ECKHOUSE & COMPANY

616-622 South Michigan Boulevard CHICAGO, ILLINOIS

Manufactured by

UNIVERSAL MACHINE WORKS

ST. LOUIS 3610 Enright Avenue MISSOURI

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RINGS, Tractor Quick Detachable Steering

Loxon—See Universal Lug Co.
Universal Lug Co., 1401 S. 55th Ct., Cicero, Ill. "Loxon."

RIVET CLIPPERS—See Clippers, Bolt and Rivet

RIVET SETS—See Sets, Rivet

RIVETING JIGS—See Jigs

RIVETS, Brass and Copper

American Brass Co., Waterbury, Conn. (See page 165.)
Atlas Tack Corp., Fairhaven, Mass.
Blake & Johnson Co., Waterbury, Conn. (See page 847.)
Boss Nut Co., 1732-54 N. Kolmar Ave., Chicago, Ill.
Bridgeport Brass Co., Bridgeport, Conn. "Crown." (See page 907.)
Champion Brass Works, Coldwater, Mich. (See page 615.)
Clendenin Bros., Central Ave. & Fawn St., Baltimore, Md.
Cleveland Wrought Products Co., W. 58th St., South of Dennison Ave., Cleveland, O. (See page 875.)
Cobb & Drew, Plymouth, Mass.
Continental Wood Screw Co., Mt. Pleasant St., New Bedford, Mass.
Crown—See Bridgeport Brass Co.
Eagle—See Plume & Atwood Mfg. Co.
Falls Rivet Co., Kent, O.
Foster Bolt & Nut Mfg. Co., 3556 E. 72d St., Cleveland, O. "Perfection."
General Mfg. Co., 66 N. Elm St., Waterbury, Conn.
Hassall, John, Clay & Oakland Sts., Brooklyn, N. Y. (See page 701.)
Perfection—See Foster Bolt & Nut Mfg. Co.
Plume & Atwood Mfg. Co., 470 Bank St., Waterbury, Conn. "Eagle."
Progressive Mfg. Co., 52 Norwood St., Torrington, Conn.
Raybestos Co., Bridgeport, Conn. (See page 573.)
Rome Brass & Copper Co., E. Dominick St., Rome, N. Y.
Steele & Johnson Mfg. Co., 779 S. Main St., Waterbury, Conn.
Stimpson Co., Edward B., 70 Franklin Ave., Brooklyn, N. Y.
Waterbury Brass Goods Corp., 160 Washington Ave., Waterbury, Conn.
Waterbury Mfg. Co., 236 Grand St., Waterbury, Conn.

RIVETS, CLINCH—See Rivets, Tubular

RIVETS, CONTACT—See Platinum; also Points, Sparking

RIVETS, COPPER—See Rivets, Brass

RIVETS, Iron and Steel

Aetna Screw & Bolt Co., 104 S. Clinton St., Chicago, Ill.
American Screw Co., 21 Stevens St., Providence, R. I.
Atlas Bolt & Screw Co., Cleveland, O. (See page 845.)
Champion Rivet Co., Harvard Ave. & Erie R. R., Cleveland, O. "Victor."
Cobb & Drew, Plymouth, Mass.
Columbus Bolt Works Co., Columbus, O. (See page 155.)
Continental Wood Screw Co., Mt. Pleasant St., New Bedford, Mass.
Falls Rivet Co., Kent, O.
Garland Mfg. Co. (W. Pittsburgh), Pittsburgh, Pa.
General Mfg. Co., 66 N. Elm St., Waterbury, Conn.
Hassall, John, Clay & Oakland Sts., Brooklyn, N. Y. (See page 701.)
Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill. (See page 915.)
Lamson & Sessions Co., 2188 Scranton Rd., Cleveland, O.
Michigan Bolt & Nut Works, Ft. Meldrum Ave., Detroit, Mich.
National Screw & Tack Co., 2440 E. 75th St., Cleveland, O.
Pittsburg Screw & Bolt Co., Preble Ave. (N. S.), Pittsburgh, Pa.
Plymouth Mills, Billington St., Plymouth, Mass.
Reed & Prince Mfg. Co., Duncan Ave., Worcester, Mass.
Upson Nut Co., Unionville, Conn.
Victor—See Champion Rivet Co.

RIVETS, PLATINUM—See Platinum; also Points, Sparking

RIVETS, STEEL—See Rivets, Iron

RIVETS, Tubular and Clinch

Thompson Mfg. Co., Judson L., Waltham, Mass.
Tubular Rivet & Stud Co., Boston, Mass. (See page 1097.)

ROAD GUIDES—See Maps, Road

ROAD MAPS—See Maps, Road

ROAD SIGNS—See Signs, Special Road

ROBE LOCKS—See Locks, Robe

ROBE RAIL BAGS—See Bags, Coat Rail

ROBE RAILS—See Rails, Robe

ROBES, Automobile Lap

Automobile Apparel Co., Bush Ave., Port Chester, N. Y. "Frunt-Seat."
Ayres & Sons, Wm., Cumberland & Fourth Sts., Philadelphia, Pa.
B. E. Mfg. Co., 18 W. 18th St., New York, N. Y. "Bemco." (See page 321.)
Ballard & Co., J. O., Malone, N. Y.
Beckman Co., 3167 Fulton Rd., Cleveland, O.
Bemco—See B. E. Mfg. Co.
Bishop Co., J. H., Wyandotte, Mich.
Blumenthal & Co., Sidney, 395-401 Fourth Ave., New York, N. Y.
Burlington Blanket Co., 711 Oregin St., Burlington, Wis.
Chase & Co., L. C., Boston, Mass. (See page 997.)
Chippewa Falls Woolen Mill, Chippewa Falls, Wis.
Cleveland Woolen Mill Co., Cleveland, O.

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PERMASEAL

TRADE MARK REGISTERED U.S. PAT. OFF.

PISTON RINGS

One-piece. Individually cast out of special formula soft gray iron. Guaranteed oil and gas tight. Patented interlocking dovetail joint. Easy to fit as ordinary angle-cut rings. Quick seating turned surface—not ground. Oil wiping groove or plain finish.

SEND FOR FREE SAMPLE

Manufacturers and dealers are requested to send for free sample, PERMASEAL PISTON RING and quantity discount sheet.

ALSO PLAIN RINGS FOR FACTORY EQUIPMENT

We are prepared to furnish plain rings for factory requirements and will be pleased to submit quotations.

GRUNDY MANUFACTURING CORP.

697 Beaufait Avenue

DETROIT - - MICH.

Making Assurance Doubly Sure—

You want to know what EFEMCO rings will do where you install them. Our care in making them is what brings your customers back to you.

EFEMCO Piston Rings are tested to unusually fine micrometric limits, the rings that fail to pass this test are promptly rejected—unfit to be branded an EFEMCO product.

That's why you should recommend EFEMCO rings

FOSTER, MERRIAM AND CO.

MERIDEN, CONNECTICUT U.S.A.

Efemco Products

Automobile Accessories
Ball Bearing Casters
Roller Bearing Casters
Piston Rings
Furniture Trimmings
Grip Neck Casters
Truck Casters
Grey Iron Castings

Standardized by 85 years of service

Efemco Products

Important Piston Ring ....FACTS....

Piston Rings in Any Quantity

We have a daily output capacity of 45,000 rings and available capital for unlimited expansion.

Men at the head of our Company have been actively prominent in the manufacturing of PISTON RINGS for the last seven years—in a word, we have a complete organization.

If you have any PISTON RING problem, our Engineering Department will be glad to solve it for you.

* * *

ULTRA SEAL NON-LEAK PISTON RINGS are distinctive from other rings in that they go through an improved process of shrinking and compressing the metal, thus leaving the outer diameter soft, so that it does not wear the cylinder walls.

Every ring is tested for its tensile strength, gauged and inspected before leaving the factory.

As we have said, if you are in the market for PISTON RINGS, we are in an exceptional position to supply your wants. Let us hear from you.

REGISTERED ULTRA SEAL THE PERFECTION PISTON RING CO. NON-LEAK PISTON RINGS TRADE MARK

The Perfection Piston Ring Company

RAVENNA, OHIO

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ROBES, Automobile Lap (Continued)

Colonial Woolen Mills Co., Cleveland, O.
Comfort Auto Robe Co., Waterloo, N. Y.
Crosby-Frisian Fur Co., 571 Lyell Ave., Rochester, N. Y.
Curtis & Von Bernuth Mfg. Co., 88 W. Broadway, New York, N. Y.
Davis, Geo. W., 32 Southgate St., Worcester, Mass.
Dawson, J. & E., Palethorp & Somerset Sts., Philadelphia, Pa. "Name-On."
Draper Bros. Co., Canton, Mass.
Dusenbury & Co., Louis, New York, N. Y. (See page 489.)
Frunt-Seat—See Automobile Apparel Co.
Gausler & Starr Co., Delaware & Walnut Sts., Philadelphia, Pa.
Gordon Co., J. P., 555 N. Fourth St., Columbus, O. (See page 319.)
Milwaukee Tanning & Clothing Co., Hanover & Florida Sts., Milwaukee, Wis.
Motorwear—See Wallace Co.
Name-On—See Dawson, J. & E.
New Process Co., Warren, Pa.
New York Lap Robe Co., 219 Greene St., New York, N. Y.
Nufur—See Sanitary-Knit Fabric Co.
Omaha Auto Top Co., 709-11 S. 15th St., Omaha, Neb.
Patrick-Duluth Woolen Mills, Duluth, Minn.
Perfection Robe Co., 16 S. Market St., Chicago, Ill.
Premier Auto Novelty Mfg. Co., 375 W. Broadway, New York, N. Y.
Revillon Frères, 19 W. 34th St., New York, N. Y.
Riley & Co., Wm. B., 233 Chestnut St., Philadelphia, Pa.
Shayne & Co., C. C., 126 W. 42d St., New York, N. Y.
Shelton Looms, Shelton, Conn.
Sho-Fur—See Wisconsin Garment Co.
Stroock & Co., S., 11-13 E. 26th St., New York, N. Y.
Unity Lap Robe Mfg. Co., 49 E. 21st St., New York, N. Y.
Wallace Co., Hugh, 2616-40 E. Grand Blvd., Detroit, Mich. "Motorwear."
Wisconsin Garment Co., 711 Origen St., Burlington, Wis. "Wulauto," "Sho-Fur."
Wulauto—See Wisconsin Garment Co.

ROBES, Special Lap, for Fords

Automobile Apparel Co., Bush Ave., Port Chester, N. Y. "Frunt-Seet"
Frunt-Seet—See Automobile Apparel Co.
Hopewell Bros., Watertown, Mass. (See page 629.)
Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 321.)

ROCKER ARM SHAFTS—See Screw Machine Products to Order

ROD ANTI-RATTLERS FOR FORDS—See Anti-Rattlers, Radius Rods

ROD CUTTERS—See Cutters, Rod and Bar

ROD GAGES FOR FORDS—See Gages, Connecting Rod

RODS, Adjustable Valve Lift

(See also Machine Work; also Screw Machine Products)

Bridgeport—See Lyford Bros.
Detroit Screw Works, 1494 Franklin St., Detroit, Mich.
Goodnow & Blake Mfg. Co., Fourth & Porter Sts., Detroit, Mich. "Zephyr."
Lyford Bros., 625 Washington Ave., Bridgeport, Conn. "Bridgeport."
Michigan Screw Co., 506 S. Hosmer St., Lansing, Mich.
National Steel Products Co., 2270 Franklin St., Detroit, Mich.
Phoenix Mfg. Co., Loraine & Grand River Aves., Detroit, Mich. (See page 1127.)
Recording Devices Co., 554 W. Fifth St., Dayton, O.
Rich Steel Products Co., Springfield Pl., Battle Creek, Mich.
Steel Products Co., Cleveland, O. (See page 153.)
Wilcox Motor & Mfg. Co., Saginaw, Mich. (See pages 823 and 1027.)
Zephyr—See Goodnow & Blake Mfg. Co

RODS, Adjustable Valve Lift, for Fords

(For Valve Stem Adjusters—See Adjusters, Valve Stem)

Acme Mfg. Co., Boonton, N. J.
B-N—See Burgess-Norton Mfg. Co.
Burgess-Norton Mfg. Co., Geneva, Ill. "B-N." (See page 735.)
Detroit Screw Works, 1488 Franklin St., Detroit, Mich.
Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass. (See page 417.)
Whitehouse Mfg. Co., 42 Elm St., Newark, N. J. (See page 637.)

RODS, ALIGNING JIG CONNECTING FOR FORDS—See Jigs, Connecting Rod Aligning.

RODS, ALUMINUM—See Aluminum, Sheet

RODS, Brake

(Brake Rods complete with yoke or eye rod ends to blue print or specification)

Imperial Welding Co., 2704 W. Jefferson Ave., Detroit, Mich.
Jacobs Co., F. L., 343 Bellevue Ave., Detroit, Mich. (See page 825.)
Metzger Welding Co., 1625 Blue Rock St., Cincinnati, O. (See page 1151.)
Schweppe & Wilt Mfg. Co., Mt. Elliot & Conant Ave., Detroit, Mich.
Standard Parts Co., Cleveland, O. (See page 1149.)
Steel Products Co., (Michigan Plant) 7731 Conant Ave., Detroit, Mich.
Steel Products Co., Cleveland, O. (See page 153.)

RODS, BRASS—See Brass, Sheet

RODS, Connecting

(Finished or Machined Rods: for connecting rods in the rough—See Forgings, Drop)

Bonney Vise & Tool Works, Allentown, Pa. (See page 437.)
Carde Stamping & Tool Co., West Side, Saginaw, Mich.

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The Seal of Service

WILCOX MOTOR & MANUFACTURING CO. SAGINAW-MICH.

VALVES
LIGHT WEIGHT MUSHROOM
TAPPETS
PISTON PINS
HARDENED
AND GROUND
WORK

WILCOX
MOTOR & MFG. CO.
SAGINAW-MICHIGAN

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RODS, Connecting (Continued)

Gill & Sons Forge & Machine Works, P. H., Lorraine & Otsego Sts., Brooklyn, N. Y.

Green Bay Drive Calk Co., State & Ninth Sts., Green Bay, Wis.

Green Engineering Co., Main St. & Burns Ave., Dayton, O.

Layman Pressed Rod Co., 25 Broad St., New York, N. Y. "Pres-Tube."

Leard Co., William, New Brighton, Pa. (See page 851.)

Perfection Auto Parts Co., 404 Lakeside Ave., N. W., Cleveland, O.

Pres-Tube—See Layman Pressed Rod Co.

Saginaw Metal Parts Corp., Williamson & River Sts., Saginaw, Mich. "Super-Lite."

Sampson Mfg. Co., 1607-11 Prairie Ave., Chicago, Ill. (See page 521.)

Standard Gauge Steel Co., Beaver Falls, Pa.

Super-Lite—See Saginaw Metal Parts Corp.

Tindel-Morris Co., Eddystone, Pa.

Wayne Engineering Co., Honesdale, Pa.

Wood & Spencer Co., 1930 E. 61st St., Cleveland, O.

RODS, Connecting, for Fords

Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. (See page 81.)

Asch and Co., Inc., 16-24 W. 61st, New York, N. Y. (Eastern and Southern Distributors for Spencer Rods.) (See page 275.)

Au-To Compressor Co., Wilmington, O. "Oro."

Canton Co., A. S., 174 Franklin St., New York, N. Y.

Gray Andrews Corp., 52 Vanderbilt Ave., New York, N. Y. (Sole Distributors for B. E. Hedges Co., Auburn, N. Y.)

Grossman Auto Parts Co., White Plains, N. Y.

Harley Co., Page Blvd., Springfield, Mass. (See pages 205 and 425.)

Healy Tool & Appliance Co., 297 Washington St., Buffalo, N. Y.

Hedges Co.—See Gray Andrews Corp.

Hussey Power Parts Co., Giddings Rd., Cleveland, O.

Kraeuter & Co., Newark, N. J. (See page 711.)

Niagara Motors Corp., Dunkirk, N. Y. (See page 943.)

Oro—See Au-To Compressor Co.

Se-Co—See Stacks Engineering Co.

Specialty Products Co., 494 Mulberry St., Newark, N. J.

Speedway Engineering Co., 910 N. Illinois St., Indianapolis, Ind. (See page 1133.)

Spencer Metal Products Co., Spencer, O. (See page 766.)

Stacks Engineering Co., 216-20 W. Ontario St., Chicago, Ill. "Se-Co."

U. S. Metal Goods Co., 5211 Euclid Ave., Cleveland, O. (See page 685.)

RODS, COPPER—See Brass, Sheet

RODS, FIBRE—See Fibre, Hard

RODS, Gasoline Cock Control, for Fords

Sunderman Corp., Newburgh, N. Y (See page 193.)

RODS, PUSH—See Rods, Adjustable Valve

RODS, Radius

A. S. P.—See Larimer Co.

B-N—See Burgess-Norton Mfg. Co.

Burgess-Norton Mfg. Co., Geneva, Ill. "B-N." (See page 735.)

Cincinnati Ball Crank Co., 90 North St., Cincinnati, O. (See page 333.)

Larimer Co., 62 N. La Salle St., Aurora, Ill. "A. S. P."

RODS, Radius, for Fords

(Auxiliary radius rods or braces for front axles)

Allied Steel Products Co., 7 Walnut St., Aurora, Ill. "A-S-P."

Apco Mfg. Co., Providence, R. I.

Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. (See page 81.)

A-S-P—See Allied Steel Products Co.

A. S. P.—See Larimer Co.

Asch and Co., Inc., 16-24 W. 61st, New York, N. Y. (Eastern and Southern Distributors for Spencer Rods.) (See page 275.)

Automat-Co.—See Automotive Material Co.

Automotive Material Co., Chicago, Ill. "Automat Co." (See page 1117.)

B. B.—See Bayne Mfg. Co.

B-N—See Burgess-Norton Mfg. Co.

Badger Mfg. Corp., Milwaukee, Wis. (See page 173.)

Banner Accessory Mfg. Co., St. Louis, Mo. (See page 601.)

Bayne Mfg. Co., Bushnell, Ill. "B. B." (See page 725.)

Bear Mfg. Co., E. 17th St. & First Ave., Rock Island, Ill.

Bridgers Co., J. D., Palmetto St. & Railroad Ave., Florence, S. C.

Brocksmith Mfg. Co., 1856-60 Menard St., St Louis, Mo.

Bullinger Mfg. Co., 838-42 N. Wells St., Chicago, Ill.

Burgess-Norton Mfg. Co., Geneva, Ill. "B-N." (See page 735.)

Burlington Motor Truck Co., 1919 W. 19th St., Chicago, Ill.

Casco Mfg. Co., Thomasville, Ga. (Sole Distributors for Cooper Auto Supply Co., Thomasville, Ga.)

Cleveland Heater Co., 1900 W. 112th St., Cleveland, O. "Rex."

Cooper Auto Supply Co.—See Casco Mfg. Co.

Cox Brass Mfg. Co., Albany, N. Y. (See page 261.)

Dependable—See Gahm-McCormick Co.

Diamond Jay Dee Co., 1400 Michigan Ave., Chicago, Ill. (See page 569.)

Donlin Auto Co., C. A., Hopkins, Mo.

Dow Wire & Iron Works, Louisville, Ky. (See page 157.)

Dunham Co., Thos., Aurora, Ill. (See page 167.)

Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Factory Distributors for Stone Accessories Mfg. Co., Chicago, Ill.)

Frazier & Co., W. S., Aurora, Ill.

G. B. Garage & Mfg. Co., 299 Franklin St, Hempstead, N. Y.

Gahm-McCormick Co., 906 E. Main St., Streator, Ill. "Dependable." (See page 1139.)

Gray Andrews Corp., 52 Vanderbilt Ave., New York, N. Y. (Sole Distributors for Manufacturing Accessories Corp., Brooklyn, N. Y. "Maco.")

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BRAKE RODS

Complete Brake Rod Assemblies made to Blue Prints

F. L. JACOBS CO.
343 Bellevue Ave. Detroit, Mich.

The S. & J. Motor Products Company

55 E. La Fayette Street
Detroit, Mich.

Manufactures

OIL SEAL PISTON RINGS

Guaranteed to prevent any motor from pumping oil.

Attractive Proposition to Dealers and Distributors

* * *

No carbon **More Power**
No smoke **Less Fuel**

INDIVIDUALLY CALIBRATED

ORIGINAL HAMMERED

WASSON PISTON RING

ABSOLUTELY

GUARANTEES PERFORMANCE

BEFORE ASSEMBLING IN THE MOTOR

LAKE SALES CO., SOLE AGENTS For the United States **1947 Broadway, N. Y. C.**

STOCK CARRIED BY

Boston, Mass., Peter L. Thompson.
Stamford, Conn., Stamford Tire Co.
New Haven, Conn., S. H. Savage Co.
Bridgeport, Conn., City Auto Co.
Danbury, Conn., Geo. A. Lewis.
Stamford, Conn., Arthur B. Capron.
South Norwalk, Conn., Aaron Kohn.
Hillsdale, N. J., Hillsdale Garage.
Watertown, N. Y., F. N. Wescott.
New Brunswick, N. J., De Angelis Bros.
Chicago, Ill., U. S. Manufacturers Sales Co.
Peoria, Ill., A. Schweinbold.
New Orleans, La., Oliver H. Van Horn Co.
Spokane, Wash., Washington Mach. & Supply Co.
Salt Lake City, Utah, Mine & Smelter Sup. Co.
Minneapolis, Minn., Lucke Sales & Eng. Co.
Atlanta, Ga., Crumley Sharp Hardware Co.
Macon, Ga., Corbin Supply Co.
Columbus, Ga., W. E. Cody Co.
Chattanooga, Tenn., Southern Auto Supply Co.
Lexington, Ky., L. Gay Strode.
Richmond, Va., E. L. Taylor & Co.
Charleston, W. Va., Baldwin Supply Co.
Charleston, S. C., Bailey-Lebby Co.
Norfolk, Va., W. M. Whaley & Co.

INFORMATION SUPPLIED UPON REQUEST ABOUT THE NEW OIL

TORSION TEST
WASSON-LAKE PROCESSED
RINGS

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RODS, Radius, for Fords (Continued)

Halls, A. S., Ortonville, Minn.
Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass. (See page 417.)
Hudson Motor Specialties Co., 1934 Arch St., Philadelphia, Pa. "Slip-in."
Humboldt—See Republic Auto Parts Co.
Illinois Brass Mfg. Co., 224-30 W. Ontario St., Chicago, Ill.
J. C. M.—See Jersey City Machine Co.
Jersey City Machine Co., 115 Plymouth St., Jersey City, N. J. "J. C. M."
J. H. S.—See Sager Co.
Ketler-Elliott Co., 3153 S. California Ave., Chicago, Ill.
Larimer Co., 62 N. La Salle St., Aurora, Ill. "A. S. P."
McKinnon Dash Co., Buffalo, N. Y. (See page 831.)
Maco—See Gray-Andrews Corp.
Manufacturing Accessories Corp.—See Gray-Andrews Corp.
Midway Mechanical Co., St. Paul, Minn. (See page 667.)
Monnich-Gaylord Co., Hooper, Neb.
Motor Parts Machine Co., 645-49 S. Pierce St., Milwaukee, Wis.
Ostlind Bros., Ortonville, Minn.
Radius Rod Co., Lamoni, Ia. "H & M."
Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Humboldt."
Rex—See Cleveland Heater Co.
Sager Co., J. H., 36-38 S. Water St., Rochester, N. Y. "J. H. S."
Se-Co—See Stacks Engineering Co.
Shunk Mfg. Co., Bucyrus, O.
Simmons Mfg. Co., 3405-11 Perkins Ave., Cleveland, O.
Slip-in—See Hudson Motor Specialties Co.
Spencer Metal Products Co., Spencer, O. (See page 766.)
Stacks Engineering Co., 216-20 W. Ontario St., Chicago, Ill. "Se-Co."
Staff, J. Wadsworth, 122 S. Michigan Ave., Chicago, Ill. (Dealers.) (See pages 1177 and 1193.)
Standard Auto Accessory Co., 100 Mill St., Leipsic, O.
Standley Skid-Chain Co., Boone, Ia. (See page 679.)
Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 507.)
Stone Accessories Mfg. Co.—See Eckhouse & Co.
Tube Products Co., 2699 Guoin St., Detroit, Mich.
U. S. Metal Goods Co., 5211 Euclid Ave., Cleveland, O. (See page 685.)
Vaughn-Harris Co., Vermilion, S. Dak.
W-A—See Whetstone & Co.
Walker Mfg. Co., Hamilton & Michigan Sts., Racine, Wis.
Whetstone & Co., John H., Court St., Lapeer, Mich. "W. A."
White Products Co., 2204 S. Michigan Ave., Chicago, Ill.

RODS, Rear Axle Truss, for Fords

(For reinforcing or strengthening rear axle)

Advance Auto Specialty Mfg. Co., 10629 Garfield Ave., Cleveland, O. "Never-Slip."
Apco Mfg. Co., Providence, R. I.
Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. (See page 81.)
Badger Mfg. Corp., Milwaukee, Wis. (See page 173.)
Banner Accessory Mfg. Co., St. Louis, Mo. (See page 601.)
Brocksmith Mfg. Co., 1356-60 Menard St., St. Louis, Mo.
Christianson Harrow Works, Sioux Falls, S. Dak.
Dependable—See Gahm-McCormick Co.
Dow Wire & Iron Works, Louisville, Ky. (See page 157.)
Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.
Efemco—See Foster, Merriam & Co.
Foster, Merriam & Co., Meriden, Conn. "Efemco." (See page 821.)
Gahm-McCormick Co., 906 E. Main St., Streator, Ill. "Dependable." (See page 1139.)
Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 174 and 175.)
Goodrich-Lenhart Mfg. Co., Hamburg, Pa. (See page 721.)
Humboldt—See Republic Auto Parts Co.
Illinois Brass Mfg. Co., 224-30 W. Ontario St., Chicago, Ill.
Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.
Modern Tool & Stamping Co., 311-17 S. Clinton St., Chicago, Ill.
Motor Parts Machine Co., 645-49 S. Pierce St., Milwaukee, Wis.
Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)
Never-Slip—See Advance Auto Specialty Mfg. Co.
Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Humboldt."
Sager Co., J. H., 36-38 S. Water St., Rochester, N. Y.
Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 507.)
Sunvold & Larson Mfg. Co., Sacred Heart, Minn.
W-A—See Whetstone & Co., John H.
Whetstone & Co., John H., Court St., Lapeer, Mich. "W-A."
Worthington, A. P., 700 N. Main St., Los Angeles, Cal.

RODS, RUBBER—See Rubber, Hard

RODS, STEEL—See Steel

RODS, STEERING—See Connections, Steering

RODS, STEERING, FOR FORDS—See Links, Steering

RODS, TRUSS FOR FORDS—See Rods, Rear Axle Truss

RODS, VALVE LIFT—See Rods, Adjustable Valve

RODS, Welding

Carbox—See Central Steel & Wire Co.
Central Steel & Wire Co., 119 N. Peoria St., Chicago, Ill. "Swedox," "Lektrox," "Crabox," "Nonox," "Castox," "Vanox," "Kromox."
Castox—See Central Steel & Wire Co.
Eagle Smelting & Refining Works, Trenton, N. J.
Kromox—See Central Steel & Wire Co.
Lektrox—See Central Steel & Wire Co.
Monox—See Central Steel & Wire Co.

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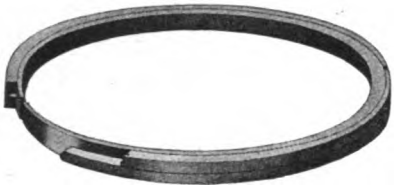
KURTZ
PISTON RINGS

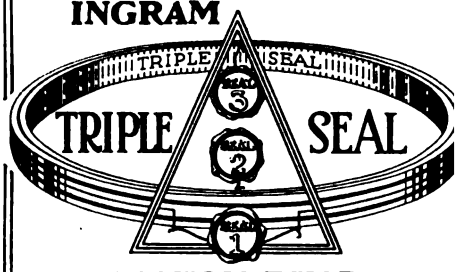


give greater compression, save gasoline and oil, eliminate carbon troubles. The most scientifically constructed and perfectly finished rings made.

THE CANTON AUTO PARTS MFG. CO.

CANTON OHIO

INGRAM



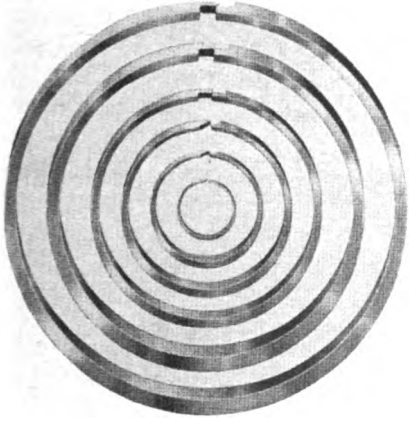
PISTON RING
(PATENTED)
BEST BY TEST

ROTARY HAMMERED
THE RING THAT EFFICIENCY AND ECONOMY DEMAND
THE HIGHEST GRADE, REALLY LEAKLESS RING OF THEM ALL

GUARANTEED
Will positively prevent leakage of compression and by-passing of lubricating oil. Write at once for full details and discounts to the trade.

THE INGRAM MOTOR CO., Inc.
1641-D Bay Street
ROSEBANK, STATEN ISLAND, N. Y.
(Greater New York City)
Exclusive Foreign Sales Agents:
THE W. H. ALLISON CO.
519 Dime Bank Building, Detroit, Mich.
AUTOMOTIVE PRODUCTS COMPANY
3 Berners Street, London, W. 1, England

Prescott Piston Rings



Individually cast in our own Foundry from Iron of Correct Analysis
Machine work of Highest Order
Very large Capacity

Wide variety of Standard and Oversize Rings always in stock for immediate delivery to Jobbing Trade

Manufactured by

Prescott Auto Parts Co., Webster, Mass.

Manufacturers

are requested to send us copies of all catalogues as soon as issued. This will assist us in listing your name in this Directory under the proper classification or classifications and will then be placed in our file for reference.

The Automobile Trade Directory

243-249 West 39th Street New York

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RODS, Welding (Continued)

Swedox—See Central Steel & Wire Co.
Trenton Smelting & Refining Co., Canal & Pearl Sts., Trenton, N. J.
Vanox—See Central Steel & Wire Co.

ROLLER BEARINGS—See Bearings, Roller

ROLLER BEARINGS FOR FORDS—See Bearings, Drive Gear, Ball and Roller Thrust

ROLLER CHAINS—See Chain, Transmission

ROLLERS, Curtain

(For curtains in limousines or other closed cars)

A & E Auto Top Co., 33-35 E. Cross St., Ypsilanti, Mich. (See page 325.)
Carey-McFall Co., 2156 E. Dauphin St., Philadelphia, Pa. "Edw. Reukauf."
Cowles & Co., C., New Haven, Conn. (See page 651.)
Curtain Supply Co., 350 W. Ontario St., Chicago, Ill. "Rex."
English & Mersick Co., New Haven, Conn. (See pages 623 and 783.)
Edw. Reukauf—See Carey-McFall Co.
Hartshorn Co., Stewart, 250 Fifth Ave., New York, N. Y.
Rex—See Curtain Supply Co.
Ternstedt Mfg. Co., Artillery & Muster Ave., Detroit, Mich. (See page 799.)
White Mfg. Co., 155 Cannon St., Bridgeport, Conn.

ROLLING MACHINES — See Machines, Fender Rolling

ROLLS, TOOL—See Bags, Tool

ROOMS, DRYING—See Rooms, Paint and Varnish Drying

ROOMS, Paint and Varnish Drying

Drying Systems, 11-17 S. Desplaines St., Chicago, Ill. (See page 1107.)

ROPE CLAMPS—See Clamps, Wire Rope

ROPE or CABLE, Bronze Wire

(For operating brakes or cut-outs)

American Brass Co., Waterbury, Conn. (See page 165.)
Elephant—See Phosphor Bronze Smelting Co.
Omega—See Riverside Metal Co.
Phosphor Bronze Smelting Co., 2200 Washington Ave., Philadelphia, Pa. "Elephant."
Reeves & Co., Paul S., 1415-25 Catherine St., Philadelphia, Pa.
Riverside Metal Co., Riverside, N. J. "Omega."

ROPE or CABLE, Steel Wire

(For operating brakes or cut-outs)

American Steel & Wire Co., Chicago, Ill. (See page 829.)
Atlas—See Fischer & Hayes Rope & Steel Co.
Broderick & Bascom Rope Co., 805 N. Main St., St. Louis, Mo.
Fischer & Hayes Rope & Steel Co., 741-45 W. Van Buren St., Chicago, Ill. "Atlas." (See page 1005.)
Hazard Mfg. Co., 81 E. Ross St., Wilkes-Barre, Pa.
Roeblings Sons Co., John A., S. Broad & Canal Sts., Trenton, N. J.
Trenton Iron Co., Trenton, N. J.
Waterbury Co., 63 Park Row, New York, N. Y.

ROPES, CHAINS and BARS, Tow

American—See Fairbanks Co.
American Chain Co., Bridgeport, Conn. (See page 535.)
American Steel & Wire Co., Chicago, Ill. (See page 829.)
Au-To-To—See Waite-Rhoads Co.
Badger Mfg. Corp., Milwaukee, Wis. (See page 173.)
Basline Autowline—See Broderick & Bascom Rope Co.
Bellevue Mfg. Co., Bellevue, O. "Buckeye."
Berger & Co., 208 W. 11th St., Los Angeles, Cal. "Berline Kant Kink." (See page 641.)
Berline—Kant-Kink—See Berger & Co.
Broderick & Bascom Rope Co., 805 N. Main St., St. Louis, Mo. "Basline Autowline."
Buckeye—See Bellevue Mfg. Co.
Bull Dog—See Chain Products Co.
Chain Products Co., 3924 Cooper Ave., Cleveland, O. "Bull Dog."
Channon Co., H., 150 N. Market St., Chicago, Ill.
Cleveland Chain & Mfg. Co., Cleveland, O.
Cooper Mfg. Co.—See Fulton Co.
Danielson Tool Co., Fulton St., Wausau, Wis.
Dyer Co., G. H., 155 Brookline St., Cambridge, Mass.
Edstrom Machinery Co., Cary, Ill. "Kant Kink." (See page 1175.)
Excelsior—See Wickwire Spencer Steel Corp.
Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill. "American.") (See pages 137 to 140.)
Fischer & Hayes Rope & Steel Co., 741-45 W. Van Buren St., Chicago, Ill. (See page 1005.)
Fulton Co., Dept S, 75th and National Aves., Milwaukee, Wis. (Sole Distributors for Cooper Mfg. Co., Marshalltown, Iowa.) (See page 1036.)
Gist Auto Supply Co., 1711 Grand Ave., Kansas City, Mo.
Hercules—See Leschen & Sons Rope Co.
Hogarty, Edward, Mill St., Unionville, Conn. "Utility."
Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Simplicity Products Mfg. Co., Milwaukee, Wis.)
K. H. K.—See Kay Co.
Kant-Kink—See Berger & Co.
Kant-Kink—See Edstrom Machinery Co.
Kay Co., Kay H., 967 Woodward Ave., Detroit, Mich. "K. H. K." (See pages 83 and 869.)
Keepers, J. C., 213 W. Park St., Olathe, Kans.
Leader Skid Chain Co., 4104 Manchester Ave., St. Louis, Mo.
Leschen & Sons Rope Co., A., 5909 Kennerly Ave., St. Louis, Mo. "Hercules."
Newhall Chain Forge & Iron Co., 90 West St., New York, N. Y.
Robinson-Carter Co., 1711 Grand Ave., Kansas City, Mo. (See page 1239.)
Rochester Rope Goods Co., 330 Florida St., Milwaukee, Wis.
Service Station Equipment Co.—See Fairbanks Co.

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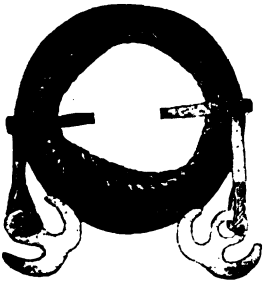
Every Car Should Carry a Towline

Thousands of car owners are coming to look upon a "Towline" as they do upon carrying a spare tire—this is the reason why more and more towlines are sold every year.



How Many Do You Sell?

Do you realize that every car owner that comes into your store or garage is a possible customer for a towline? Then why not sell him one? The "Excelsior" Towline is made for both pleasure cars and trucks. Compactly coiled and packed in a neat canvas bag.

EXCELSIOR BRAND

Write Us Today for Terms to the Trade

WICKWIRE SPENCER STEEL CORPORATION
Worcester, Mass. Buffalo, N. Y.

Sales Offices and Warehouses:

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Detroit Chicago Tulsa, Okla.
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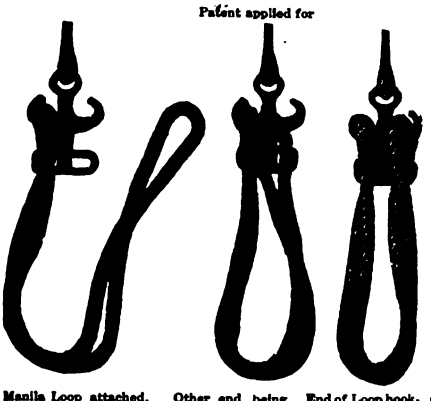
American Steel & Wire Co.'s

Auto Towing Cables

For Passenger Car Service

Patent applied for



Manila Loop attached. Always remains in Hook. Can be detached when loop wears out.

Other end being inserted. Large ring provided to easily insert loop, the water and sand soaked.

End of Loop hooked—ready for towing. Quadruple strength — firmly attached. No loosening and dropping the tow.

It is Neither Safe Nor Prudent Not to Have One in the Car.

Booklet describing--free

Ignition and Lighting Cables

Rubber Covered, Tape Covered, or Steel Armored

We make every variety for adaptation to all automobile uses.

Illustrated Catalogue free

American Steel & Wire Company

Chicago - New York

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ROPES, CHAINS AND BARS, Tow (Continued)

Simplicity Products Mfg. Co.—See Jonas, C. N. & F. W.

Smith Mfg. Co., C. F., 530 S. First St., De Kalb, Ill.

U. W.—See Upson-Walton Co.

United States Chain & Forging Co., Thompson Ave., Pittsburgh, Pa.

Upson-Walton Co., 1310 W. 11th St., Cleveland, O. "U. W." (See page 1105.)

Utility—See Hogarty, Edward.

Waite-Rhoads Co., 1455 S. Broadway, Denver, Colo. "Au-To-To."

Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 735.)

Wickwire-Spencer Steel Corp., Worcester, Mass. (See pages 829 and 909.)

Wisconsin Welding & Cutting Co., 556 E. Water St., Milwaukee, Wis. (See page 1153.)

ROTARY CUTTERS—See Saws and Cutters, Rotary

ROTARY HACK SAWS—See Saws and Cutters, Rotary

ROTARY RASPS—See Tools, Tire Vulcanizing

ROTARY SHEARS—See Shears, Rotary

ROTATORS, Valve

Garlock Valve Rotator Co., 201 Peterson St., Paterson, N. J.

ROUGH STUFF—See Fillers, Paint

RUBBER BATTERY JARS—See Jars, Rubber Battery

RUBBER BUCKETS—See Buckets, Collapsible

RUBBER BUMPERS—See Bumpers, Rubber Spring

RUBBER CEMENT—See Cement, Tire; also Tubing, Soft Rubber

RUBBER COATED CLOTH—See Cloth, Rubber Coated

RUBBER CONNECTORS—See Tubing, Soft Rubber

RUBBER CORD, AIRPLANE—See Cord, Airplane Rubber

RUBBER CUTTING KNIVES—See Knives, Tire Repair

RUBBER FUSELAGE WIRE PROTECTORS, AIRPLANE—See Protectors, Airplane Fuselage Wire

RUBBER GAS BAGS—See Bags, Rubber Gas

RUBBER GASKETS—See Packing

RUBBER GLOVES—See Gloves, Rubber

RUBBER GRIPS, AIRPLANE—See Grips, Airplane Rubber

RUBBER HAMMERS—See Mallets, Rubber

RUBBER, Hard

(Sheet, Rod and Tube)

American Hard Rubber Co., 11 Mercer St., New York, N. Y.

Dugas-Hundley Corp., 29 W. 34th St., New York, N. Y. "Reliance."

Luzerne Rubber Co., Muirhead Ave., Trenton, N. J.

Reliance—See Dugas-Hundley Corp.

Stokes Rubber Co., Jos., Taylor St., Trenton, N. J.

Vulcanized Rubber Co., 251 Fourth Ave., New York, N. Y.

RUBBER HORN BULBS—See Bulbs, Rubber Horn

RUBBER HOSE—See Hose, Rubber

RUBBER MALLETS—See Mallets, Rubber

RUBBER MATS—See Mats, Rubber

RUBBER MATTING—See Mats, Rubber

RUBBER MILL MACHINERY—See Machinery, Rubber Mill

RUBBER PACKING—See Packing, Rubber

RUBBER PAINTS—See Paints, Rubber

RUBBER PATCHES—See Patches, Tire Repair

RUBBER PLUGS—See Plugs, Tire Repair

RUBBER PRESERVATIVES—See Compounds, Tire Preserving

RUBBER PUTTY—See Compounds, Tire Repair

RUBBER RADIATOR CAPS—See Caps, Rubber Radiator

RUBBER ROD—See Rubber, Hard

RUBBER SHEET—See Rubber, Hard

RUBBER SPRING BUMPERS—See Bumpers, Spring

RUBBER TESTING INSTRUMENTS—See Instruments, Rubber and Felt Testing

RUBBER TIRES—See Tires

RUBBER TUBING—See Tubing, Soft Rubber

RUBBER WIRE STREAMLINING, AIRPLANE—See Streamlining Airplane Rubber Wire

RUBBERS, TIRE PUMP CONNECTION—See Washers, Tire Pump

RUBBING MACHINES, BODY—See Machines, Body Rubbing

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NO-LEAK-O

THE RING WITH A REASON

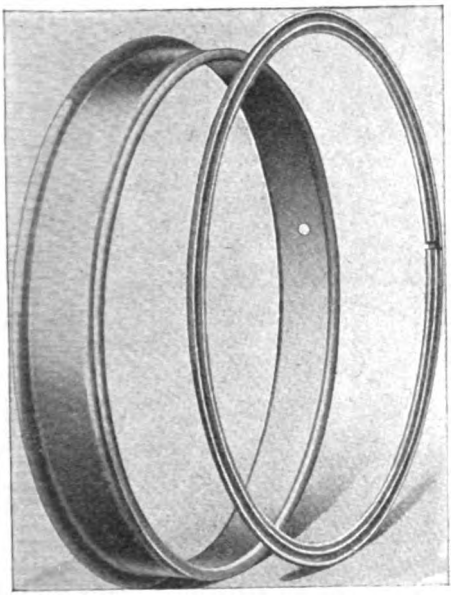
The cylinder walls of all gasoline motors warp and wear and the piston ring cannot conform to the warped places. The explosion and other forces destroy the seal of oil as it passes over these places; the gas escapes and oil passes up.

"NO-LEAK-O" "oilSEALing" Piston Rings have a 45 degree angle groove full of oil, which pulsates as the piston moves up and down and KEEPS a film of oil between the ring and the cylinder wall REGARDLESS of warped or worn places on the cylinder wall. The motor maintains maximum power.

RESTORES POWER IN OLD MOTORS WITHOUT REBORING. ON MARKET 5 YEARS. OVER 20,000,000 IN USE. POPULAR THROUGH SERVICE. PRICE 50c UP. If your jobber cannot supply you, order direct.

FACTORY: MUSKEGON, MICH. NO-LEAK-O PISTON RING CO., BALTIMORE, MD.

Besides Goodyear Detachable Rims



Cleveland Welding Products include Standardized Demountable Rims; Clincher Rims; Tire Bases for Solid Tires; Flanges and Motor Truck Wheel Bands; Gear Ring Forgings; Special Electrically Welded Rings; Special and Irregular Shapes of Tubing. We also manufacture and market Goodyear Detachable Rims for Wire, Disc and Wood Wheels; and Demountable Rims.

Every process, from the making of the steel to the finishing of these products, is under the direct supervision of our own skilled men.

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of The Hydraulic Steel Company
Cleveland, Ohio

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Singer Building
Detroit
Book Building

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Fisher Building
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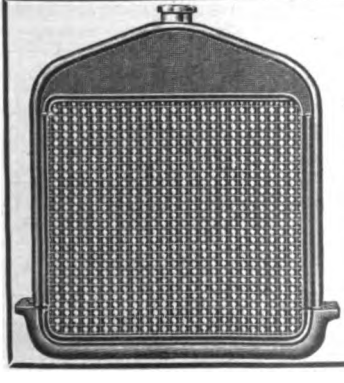

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Endorsed and Used on Prominent Makes of Cars. No Experiment

One Million in Use on Higher Priced Cars.

Soldered All Over. Consequently Strong, Rigid Mass of Separate Cells. In case of Freezing, Provision is Made for Expansion of Tubes. Facility of Repair in Case of Damage.

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Radiator Division
BUFFALO, N. Y. - - U. S. A.

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RUNNING BOARD BRACES FOR FORDS —See Braces

RUNNING BOARD MATS—See Mats, Step or Running Board

RUNNING BOARD MOULDING — See Moulding

RUNNING BOARD PLATES—See Plates, Heel, Pedal or Step

RUNNING BOARD SUPPORTS—See Braces, Running Board

RUNNING BOARDS—See Boards, Running

RUNNING GEAR ALIGNERS—See Gages, Wheel Aligniug

RUST PREVENTING COMPOUNDS — See Compounds, Rust Preventing

RUST PROOFING—See Galvanizing

RUST REMOVING COMPOUNDS — See Compounds, Rust Preventing

S-WRENCHES—See Wrenches, Nut and Bolt

SADDLES, Motorcycle

Mesinger Mfg. Co., H. & F., Austin Pl. & E. 144th St., New York, N. Y.

Superior Metal Products Co., Elyria, O. (See page 927.)

SAFETY BELTS—See Bolts, Aviator's Safety

SAFETY STARTING CRANKS — See Cranks, Safety

SAFETY TOW HOOKS—See Hooks, Safety Tow

SALTS, SOLDERING—See Flux, Soldering

SAND BOXES—See Boxes, Sand

SAND PAPER—See Paper, Emery and Sand

SANDERS, ROAD—See Boxes, Sand

SAW BLADES—See Blades, Hack Saw

SAWS, Band

American Saw Mill Machinery Co., Hackettstown, N. J.

American Wood Working Machinery Co., 591 Lyell Ave., Rochester, N. Y.

Bentel & Margedant Co., Hamilton, O.

Cordesman, Meyer & Co., 53-57 Central Ave., Cincinnati, O.

Cordesman-Rechtin Co., Cincinnati, O.

Crescent Machine Co., Leetonia, O.

Defiance Machine Works, 434 Perry St., Defiance, O.

Fay & Egan Co., J. A., Cincinnati, O.

Hall & Brown Woodworking Machine Co., Broadway & Ninth St., St. Louis, Mo.

Hiles & Co., C. A., 14th & Western Ave., Chicago, Ill.

Jones Superior Machine Co., 1258-72 W. North Ave., Chicago, Ill.

Kane & Roach, Niagara & Shonnard Sts., Syracuse, N. Y.

Marston & Co., J. M., 226-28 Ruggles St., Boston, Mass.

Oliver Machinery Co., Coldbrook & Clancy Sts., Grand Rapids, Mich.

Power & Co., L., 20 S. 23d St., Philadelphia, Pa.

Pryibil Machine Co., P., 512-24 W. 41st St., New York, N. Y.

Root Co., B. M., 30-36 Jefferson Ave., York, Pa.

Silver Mfg. Co., Salem, O.

Simonds Mfg. Co., North St., Fitchburg, Mass.

Smith Machine Co. H. B., Smithville, N. J.

Wallace & Co., J. D., 1401-05 W. Jackson Blvd., Chicago, Ill.

West Side Iron Works, 327-29 Front Ave., N. W., Grand Rapids, Mich.

Woodworkers Tool Works, Chicago, Ill. (See page 833.)

SAWS, HACK—See Frames, Hack Saw; also Blades, Hack Saw

SAWS AND CUTTERS, Rotary

(For cutting holes in cowl boards for mounting instruments)

Barnes & Irving, Syracuse, N. Y. "Misener." (See page 833.)

Jiffy—See Koch & Co.

Koch & Co., Paul W., 21 S. Wells St., Chicago, Ill. "Jiffy."

Misener—See Barnes & Irving.

SCORED CYLINDERS, REPAIRING OF—See Cylinders, Scored, Repairing of

SCRAPERS, Bearing

Alert Tool Co., 237 N. Sixth St., Philadelphia, Pa.

Bicknell Mfg. & Supply Co., 22 N. Academy St., Janesville, Wis.

Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.

Buffum Tool Co., Louisiana, Mo. (See page 529.)

Gogle Hand-Forged Tool Co., 1941 Polk St., San Francisco, Cal. "Ideal."

Goodell-Pratt Co., Greenfield, Mass.

Harrold Tool & Forge Co.—See Wiebusch & Hilger.

Hayes File Co., 1986 Franklin St., Detroit, Mich.

Ideal—See Gogle Hand-Forged Tool Co.

Kraeuter & Co., Newark, N. J. (See page 711.)

Mound Tool Co., Dept. D., Seventh & Hickory Sts., St. Louis, Mo. (See page 1109.)

Osborne & Co., C. S., Newark, N. J.

Storts & Son, John, 2010-12 Vine St., Philadelphia, Pa.

Taber Mfg. Co., 2227 Woolsey St., Berkeley, Cal.

Vichek Tool Co., Cleveland, O.

Wiebusch & Hilger, 110 Lafayette St., New York, N. Y. (Sole Selling Agents for Harrold Tool & Forge Co., Columbiana, O.)

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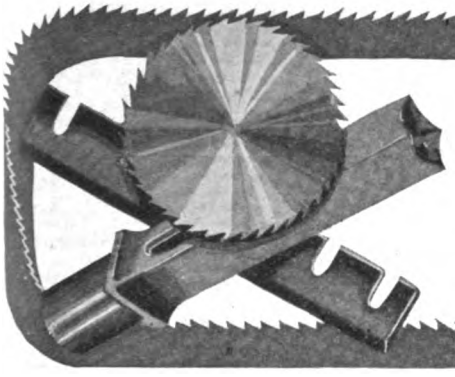

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Large and complete stock. Prompt Shipments. Write for catalogue.

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Brooklyn, N. Y.

Prices
$1.00 up to 4"
1.25 up to 4¾"
1.50 up to 3½"

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SCRAPERS, Carbon

Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.
Buffum Tool Co., Louisiana, Mo. (See page 833.)
Chapman Bros. Co., Saybrook, Conn. "Saybrook."
Flexible Carbon Scraper Co., 1421 W. Washington St., Los Angeles, Cal.
Marcy Tool Works, Putnam, Conn.
Maximus—See Taunton Tool Co.
Mound Tool Co., Dept. D., Seventh & Hickory Sts., St. Louis, Mo. (See page 1109.)
Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)
Osborne & Co., C. S., Newark, N. J.
Saybrook—See Chapman Bros Co
Taunton Tool Co., 49 Adams St., Taunton, Mass. "Maximus."

SCRAPERS, Foot

(For attachment to running board for scraping dirt or mud from the feet before entering car; for running board mats—See Mats, Running Board)

Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. "Klean-Kar." (See page 81.)
Bihler, Albert E., 2219 Howard St., Omaha, Neb.
Klean-Kar—See Armand Machine Works.
Stanwood Equipment Co., 308 N. Michigan Blvd., Chicago, Ill. (See page 91.)

SCREENS, SUN—See Shields, Sun

SCREENS, Wire Windshield

Mac Comfort Screen Co., Louisville, Ky.
Webb Auto Screen Co., Brainerd, Minn.

SCREW CASES—See Cases, Bolt

SCREW CUTTING DIES—See Taps and Dies

SCREW DRIVERS—See Drivers, Screw

SCREW DRIVING MACHINES—See Machines, Screw Driving

SCREW-EYES, Brass and Iron

Hindley Mfg. Co., John St., Valley Falls, R. I.
Sargent Co., Water & Wallace Sts., New Haven, Conn.
Wire Goods Co., 28 Union St., Worcester, Mass.

SCREW Machine Products to Order

A C R—See American Cloth Register Co.
Acme Engineering & Mfg. Co., 355 Union Park Ave., Chicago, Ill.
Acme Mfg. Co., Boonton, N. J.
Advance Mfg. & Tool Co., 3741 E. 93rd St., Cleveland, O.
Advance Tool Works, 2300 Warren Ave., Chicago, Ill.,
Aetna Screw & Bolt Co., 104 S. Clinton St., Chicago, Ill.
Akins Machine Co., Wm. C., 1 Gleason Pl., Rochester, N. Y.
Akron-Selle Co., High & Chestnut Sts., Akron, O.
Albaugh-Dover Co., 2100 Marshall Blvd., Chicago, Ill.
Albrass Co., Trivoli St., Albany, N. Y.
American Brass Novelty Co., Grand Haven, Mich.
American Brass Products Co., Pottstown, Pa.
American Cloth Register Co., 189 Main St., New Britain, Conn. "A C R."
American Die & Tool Co., Reading, Pa. (See page 991.)
American Multigraph Co., Cleveland, O.
American Steam Gauge & Valve Mfg. Co., 208-20 Camden St., Boston, Mass.
Ansonia Mfg. Co., Ansonia, Conn.
Arlington Machine Works, 668-74 Jenks St., St. Paul, Minn.
Artistic Bronze Co., 2050 Fairfield Ave., Bridgeport, Conn.
Ashley Machine Works, 724 University Ave., Rochester, N. Y.
Atlantic Mfg. Co., Milford, Conn.
Atlas Brass Foundry Co., Columbus, O. (See page 595.)
Attwood Brass Works, Grand Rapids, Mich. (See page 1195.)
Automatic Products Co., 1145 W. Grand Blvd., Detroit, Mich. (See page 835.)
Automatic Screw Machine Products Co., 418 W. Grand Ave., Chicago, Ill.
Automobile Screw Products Co., 1170 E. 152nd St., Cleveland, O.
Babson-Dow Mfg. Co., 60 Fulda St. (Roxbury), Boston, Mass.
Bard Mfg. Co., Royersford, Pa. (See page 937.)
Barkelew Metal Products Co., Richard & Bowen Sts., Dayton, O. (See page 657.)
Barnes Co., Wallace, Bristol, Conn. (See page 887.)
Barscott Co., 39 W. Adams St., Chicago, Ill.
Becco—See Michigan Motor Specialties Co.
Bell Co., 1555 Fillmore Ave., Buffalo, N. Y.
Belvidere Screw & Machine Co., E. Madison St., Belvidere, Ill.
Bertelsmann Co., Glenn, 1109-17 Hamilton Ave., Indianapolis, Ind.
Bertschy Mfg. & Engineering Co., 802 N. 16th St., Omaha, Neb.
Bilton Machine Tool Co., Bridgeport, Conn. (See page 613.)
Blair Tool & Machine Works, 521 Greenwich St., New York, N. Y.
Blake & Johnson Co., Waterbury, Conn. (See page 847.)
Blount Engineering Co., 100 High St., Boston, Mass.
Boston Tool & Mfg. Co., 262 Dover St., Boston, Mass.
Bowen Products Corp., Auburn, N. Y. (See page 331.)
Breslove Screw Products Co., 12-14 S. Jefferson St., Chicago, Ill.
Brewster & Co., Queensboro Bridge Plaza, Long Island City, N. Y.
Bridgeport Screw Co., Williston St. & Union Ave., Bridgeport, Conn.
Brown Bag Filling Machine Co., 10 Main St., Fitchburg, Mass.
Brown Co., 1071-73 Clinton St., Syracuse, N. Y.
Brown-McLaren Mfg. Co., 5853-81 W. Fort St., Detroit, Mich.
Bryan Screw Machine Products Co., Bryan, O.
Burgess-Norton Mfg. Co., Geneva, Ill. (See page 735.)
Campbell Mfg. Co., Slater Bldg., Worcester, Mass.
Central Machine Works, 1911 N. 12th St., St. Louis, Mo.
Central Machine Works, 19 Church St., Worcester, Mass. (See page 1021.)

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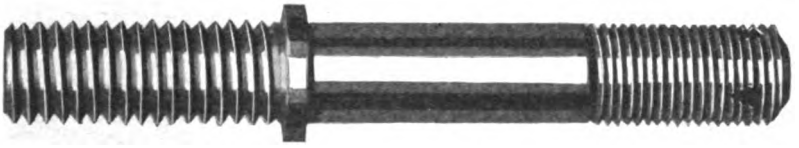

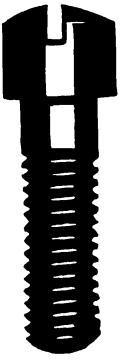

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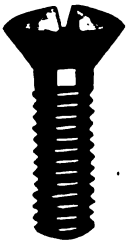
DETROIT MICH.

Manufacturers of Screw Machine Products for Automobiles, Trucks, Tractors and Airplanes.

All Cap Screws milled from the Steel Bar—capacity 400,000 daily.

Cap Screws, Conn. Rod Bolts, Clevis Pins, Studs, Special Parts.



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SCREW Machine Products to Order (Continued)

Central Service Corp., 1607 Merchants' Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 345.)

Chadbourne-Walker Machine Screw Co., 100 Sudbury St., Boston, Mass.

Chapman Co., Berlin, Wis.

Chelsea Screw Co., S. Main St., Chelsea, Mich.

Chicago Automatic Machine Co., 400-08 N. Oakley Ave., Chicago, Ill.

Chicago Metal Products Co., 501 S. Jefferson St., Chicago, Ill.

Chicago Nut Co., 2513-39 W. 20th St., Chicago, Ill.

Chicago Screw Co., Homan Ave. & Fillmore St., Chicago, Ill. (See pages 837 and 841.)

Cincinnati Ball Crank Co., 90 North St., Cincinnati, O. (See page 333.)

Cincinnati Screw Co., Twightwee, O. (See page 701.)

City Iron Works & Machine Co., 520 S. Delaware Ave., Philadelphia, Pa.

Clark-Cadle-Harmon Corp., 1139 University Ave., Rochester, N. Y.

Cleveland Heater Co., 1900 W. 112th St., Cleveland, O.

Cleveland National Machine Co., 1366 W. 70th St., Cleveland, O.

Cleveland Wrought Products Co., W. 58th St., South of Dennison Ave., Cleveland, O. (See page 875.)

Cogswell Mfg. Co., 85 Hall St., Springfield, Mass.

Coin Device & Signal Co., 409 Eighth Ave., New York, N. Y.

Colson Co., Elyria, O.

Columbus Auto Parts Co., 215 E. Russel St., Columbus, O.

Commonwealth Brass Corp., Detroit, Mich. (See page 1139.)

Commonwealth Screw Co., 26 Bartlett St., Worcester, Mass.

Connery Machine & Tool Co.—See Ryerson & Son.

Conradson Machine Tool Co., Ninth & State Sts., Green Bay, Wis.

Corbin Screw Corp., High St., New Britain, Conn.

Crittenden Mfg. Co., 3380 Washington St., Boston, Mass.

Cummings Co., Harry, Syracuse, N. Y.

Curtis Screw Works, 17 Gull St., Buffalo, N. Y.

D. & D. Machine & Tool Co., 16-20 Jefferson Ave., Elizabeth, N. J.

Dallett Co., Thos. H., 1324 Federal St., Philadelphia, Pa.

Davis Sewing Machine Co., Linden & Davis Aves., Dayton, O.

Delaware Engineering Co., C. & Buttonwood Sts., Wilmington, Del.

Detroit Machine Tool Co., 6443 St. Antoine St., Detroit, Mich.

Detroit Screw Works, 1494 Franklin St., Detroit, Mich.

Diebel, A. J., 976 Woodward Ave., Detroit, Mich. (Michigan, Indiana and Ohio Distributors for Barkelow Metal Products Co., Dayton, O.) (See page 543.)

Diuguid Bros., 975 Atlantic Ave., Brooklyn, N. Y.

Dorchester Machine & Tool Works, 70 Freeport St., Boston, Mass.

Duck Co., William B., 224-26 Superior St., Toledo, O.

E. H. Machine Co., 234 Maple St., Weehawken, N. J.

E. C. Mfg. Co., Chicago, Ill.

Eastern Machine Screw Corp., 20-40 Barclay St., New Haven, Conn.

Eisener Mfg. Co., C. C., 15423 Center St., Harvey, Ill.

Empire Mfg. Co., 180 Emmett St., Newark, N. J.

Enterprise Mfg. Co., Bowery & Center Sts., Akron, O.

Ericsson Screw Machine Products Co., 607-09 Bergen St., Brooklyn, N. Y.

Erie Bronze Co., 355 W. 19th St., Erie, Pa. (See page 261.)

Erie Specialty Co., Erie, Pa.

Eureka Co., North East, Pa.

Eveready Mfg. Co., 80 Boylston St., Boston, Mass.

Faries Mfg. Co., 624 N. Union St., Decatur, Ill.

Federal Equipment & Supply Co., 298 Broadway, New York, N. Y.

Federal Machine Products Co., 6442 Farnsworth St., Detroit, Mich.

Federal Nut, Bolt & Machine Co., 1639 Collamer Ave., Cleveland, O.

Federal Screw Works, 4725 Ellery St., Detroit, Mich.

Fernald Mfg. Co., North East, Pa.

Ferry Cap & Set Screw Co., Scranton Rd., Cleveland, O. (See page 837.)

Fischer Special Mfg. Co., 2076-78 Reading Rd., Cincinnati, O.

Fischer Spring Co., Chas., 478 Kent Ave., Brooklyn, N. Y.

Flannery Co., P. J., 33 Whiting St., New Britain, Conn.

Forest City Machine & Forge Co., 5101 Lakeside Ave., N. E., Cleveland, O.

Fostoria Screw Corp., E. Railroad St., Fostoria, O.

Framingham Screw Works, Framingham, Mass.

Franklin Machine & Tool Co., Springfield, Mass. (See page 1205.)

Garvin Machine Co., Spring & Varick Sts., New York, N. Y.

Gilmour, J. Morrison, 149-51 Lafayette St., New York, N. Y.

Gilmore-Winans Co., 306 Owen Bldg., Detroit, Mich. (Michigan Representatives for "E. C." Screw Machine Products.)

Gleason-Peters Air Pump Co., 384 Classon Ave., Brooklyn, N. Y.

Globe Machine & Stamping Co., 1200-50 W. 76th St., Cleveland, O. (See page 1049.)

Gordon-Little Co., 122-24 N. Senate Ave., Indianapolis, Ind.

Gould-Mersereau Co., 48 W. 38th St., New York, N. Y.

Grand Rapids Brass Co., 90 Scribner Ave. N. W., Grand Rapids, Mich.

Grand Tool & Machine Works, 161 Grand St., New York, N. Y.

Greer, Frederic, 525 W. Van Buren St., Chicago, Ill.

Greist Mfg. Co., New Haven, Conn. (See page 1117.)

Gwynn Engineering Co., 100 Liberty Ave., Pittsburgh, Pa.

H. K. Metal Products Co., 60 Grand St., New York, N. Y.

Hadden-Messinger Corp., 214 Taaffe Pl., Brooklyn, N. Y.

Hall Lamp Co., C. M., Detroit, Mich. (See page 493.)

Hall Machine & Tool Co., 116 Chestnut St., Providence, R. I.

Hammarlund Mfg. Co., 144-46 W. 18th St., New York, N. Y.

Hancock Mfg. Co., 802 E. Henry St., Charlotte, Mich.

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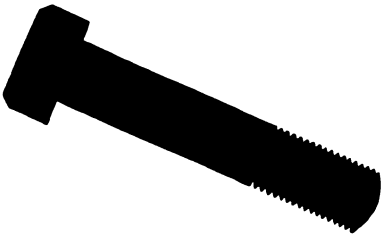

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SCREW Machine Products to Order (Continued)

Hanney Stamping Works, 3102 Woodbridge St., Detroit, Mich.

Hanson Bros., 538-48 Southington Ave., Plainville, Conn.

Harper Screw Works, F. C., 29 S. Clinton St., Chicago, Ill.

Harry Bros. Mfg. Co., 1302 E. Woodbridge St., Detroit, Mich.

Hartford Machine Screw Co., Hartford, Conn. (See page 839.)

Henry Mfg. Co., G. J., 3263-70 W. Grand Ave., Chicago, Ill.

Higginson-Gibson Mfg. Co., 76 Atherton St., (Jamaica Plain), Boston, Mass.

Hill Co., Geo. Q., 32-34 Dorchester Ave., Boston, Mass.

Hill Pump Valve Co., Belmont & Knox Aves., Chicago, Ill.

Hoerner Mfg. Co., 3920 Moneta Ave., Los Angeles, Cal. (See page 1131.)

Hub Engineering & Machine Co., Bound Brook, N. J.

Hubbell, Harvey, State St. & Bostwick Ave., Bridgeport, Conn.

Humason Mfg. Co., Division A, Forestville, Conn. (See page 943.)

Hyklas—See Parts Service Co.

Hyman & Co., Henry, 476 Broadway, New York, N. Y.

Ideal Tool & Machine Co., 48 S. Water St., Poughkeepsie, N. Y.

Iles Mfg. Co., E. W., Shelton, Conn.

Illinois Mfg. & Supply Co., 1455 S. Michigan Ave., Chicago, Ill.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Indianapolis Tool & Mfg. Co., Indianapolis, Ind. (See page 669.)

Inter-State Machine Products Co., Rochester, N. Y.

K. & Z. Automatic Screw Co., Defiance, O.

Kamco Corp., 34 Barclay St., New York, N. Y.

Keavaney & Son, W. R., 185 Bunker Hill Rd., Waterbury, Conn.

Keeler Brass Co., 251-71 Godfrey Ave., Grand Rapids, Mich.

Keyless Lock Co., 1401 Newman St., Indianapolis, Ind.

Kihm-Bowen Machine Co., 146 Colt St., Irvington, N. J.

Kineto Machine Co., 329 Plymouth St., Chicago, Ill.

King Sewing Machine Co., 90 Welland St., Buffalo, N. Y.

Klein, Adolph, 174 Centre St., New York, N. Y.

Knapp Engineering Corp., Arthur, 19 W. 44th St., New York, N. Y. (See page 881.)

Koehler Mfg. Co., Marlboro, Mass.

Krahn Mfg. Co., 583 Clinton St., Milwaukee, Wis.

Krebs Mfg. Co., 341 E. Ohio St., Chicago, Ill.

Lagerholm Co., E., 9 S. Clinton St., Chicago, Ill.

Lakewood Screw Machine Products Co., Cleveland, O.

Lazarides Mfg. Co., 56 Beekman St., New York, N. Y.

Lehigh Engineering Co., Royersford, Pa.

Levy, Benj., 355 W. Broadway, New York, N. Y.

Lewis & Milligan, 2108 Boulevard Pl., Indianapolis, Ind.

Liberty Screw Co., 383 Shrewsbury St., Worcester, Mass.

Liberty Tool & Gauge Works, 338 Bernon St., Woonsocket, R. I.

Linden & Co., Providence, R. I. (See page 839.)

Lippincott-Carwen Corp., Erie Ave. & Richmond St., Philadelphia, Pa.

Lynn Machine & Screw Co., 496 Washington St., Lynn, Mass.

McCall Machine Works, 574 Lyell Ave., Rochester, N. Y.

McCully, R. P. & C. H., 331-35 Van Buren St., Brooklyn, N. Y.

McKenna Brass & Mfg. Co., First Ave. & Ross St., Pittsburgh, Pa.

Mann Corp., Kankakee, Ill.

Mann Mfg. Co., 454-66 Golden Gate Ave., San Francisco, Cal.

Mantle & Co., 1907 Park Ave., New York, N. Y.

Manufacturers Machine Products Co., 1320-68 Mt. Elliot Ave., Detroit, Mich.

Marion Screw & Machine Co., 17 N. Fifth St., Philadelphia, Pa.

Marquette Metal Products Co., 6545 Carnegie Ave., Cleveland, O.

Mattatuck Mfg. Co., 100 Southmayd St., Waterbury, Conn.

May Automatic Products Co., 14th & Howard Sts., Detroit, Mich. (See page 839.)

Meisel Press Mfg. Co., 945 Dorchester Ave., Boston, Mass. (See page 483.)

Merit Machine Mfg. Corp., 465 Greenwich St., New York, N. Y.

Metal Industries Service Co., Cleveland, O.

Metal Machining Tool Co., 2176 E. 76th St., Cleveland, O.

Metal Parts Mfg. Co., 1034 E. 152nd St., Cleveland, O.

Meyer Mfg. Co., A. J., 317-21 John St., West Hoboken, N. J.

Michigan Motor Parts Corp., 2124 Howard St., Detroit, Mich.

Michigan Motor Specialties Co., 120 Mt. Elliott Ave., Detroit, Mich. "Becco."

Michigan Pattern & Machine Works, 3429-39 E. Jefferson Ave., Detroit, Mich.

Michigan Screw Co., 506 S. Hosmer St., Lansing, Mich.

Miles, Franklin S., 205-07 Quarry St., Philadelphia, Pa.

Milholland Machine Co., W. 23rd & Belt R. R., Indianapolis, Ind.

Milwaukee Screw Machine Products Co., Tenth St. & Cold Spring Ave., Milwaukee, Wis.

Milwaukee Separator Mfg. Co., 247 Madison St., Milwaukee, Wis.

Modern Machine Shop, 15th & Reed Sts., Philadelphia, Pa.

Modern Tool & Stamping Co., 311-17 S. Clinton St., Chicago, Ill.

Moesta & Ruehrwein, Hulbert Blk., Cincinnati, O.

Monarch Auto Specialties Co., 1211-13 Clybourn Ave., Chicago, Ill.

Montgomery Tool & Mfg. Co., First & Madison Sts., Dayton, O.

Morgan Mfg. Co., Court St., Keene, N. H. (See page 751.)

Mossberg Co., Frank, Attleboro, Mass.

Mueller Metals Co., Lapier Ave., Port Huron, Mich.

Multiple Spark Plug Mfg. Co., 138 Holden St., Minneapolis, Minn.

National Acme Co., Cleveland, O. (See page 657.)

National Engineering Co., Broad & Chestnut Sts., Philadelphia, Pa.

National Machine Products Co., 4850 Bellevue Ave., Detroit, Mich.

National Sewing Machine Co., Belvidere, Ill.

National Steel Products Co., 2270 Franklin St., Detroit, Mich.

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MAY AUTOMATIC PRODUCTS CO.

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Garage Pump

Simple
Compact
Economical
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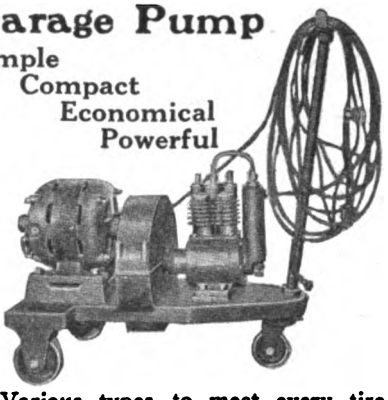

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LINDEN & COMPANY

PROVIDENCE RHODE ISLAND

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SCREW Machine Products to Order (Continued)

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)
Nelson Tool Co., 782 E. 142d St., New York, N. Y.
New Britain Machine Co., Chestnut St., New Britain, Conn.
New Haven Screw Co., 191-93 Foster St., New Haven, Conn.
Newton Machine Screw Co., 19 Craft St., Newtonville, Mass.
Newton Mfg. Co., Church St., Plainville, Conn.
Niagara Brass Mfg. Co., Lockport, N. Y.
North Star Specialty Co., 1834 University Ave., St. Paul, Minn.
Ohio Metal Products Co., Detroit, Mich.
Olson Mfg. Co., 54 Commercial St., Worcester, Mass.
Ontario Machine Screw Co., 3415 Roher St., Philadelphia, Pa.
Ottemiller Co., Wm. H., Pattison St., & M. & P. R. R., York, Pa.
Otto Metal Goods Corp., Wm. H., 401-07 St. Paul's Ave., Jersey City, N. J.
P. & C. Nut Co., 519 Water St., Jackson, Mich.
Paramount Mfg. Co., Westfield, N. J.
Park Mfg. Co., 47 Lagrange St., Worcester, Mass. (See page 677.)
Parker & Harper Mfg. Co., 18 Grafton St., Worcester, Mass.
Parker White-Metal & Machine Co., 23rd & Railroad Sts., Erie, Pa.
Parsons Mfg. Co., 5301-47 Bellevue Ave., Detroit, Mich.
Parts Service Co., 9307-11 Hough Ave., Cleveland, O. "Hyklas." (See page 1207.)
Peerless Automatic Machine Co., 1970 W. 77th St., Cleveland, O.
Peninsular Milled Screw Co., 6910 E. Lafayette St., Detroit, Mich.
Pennsylvania Shafting Co., Spring City, Pa.
Perry-Fay Mfg. Co., Cleveland St., Elyria, O.
Pheoll Mfg. Co., 5750 W. Roosevelt Rd., Chicago, Ill.
Philadelphia Machine Screw Works, 624-26 Race St., Philadelphia, Pa.
Phillips, F. C., Hill St., Stoughton, Mass.
Phoenix Mfg. Co., Loraine & Grand River Aves., Detroit, Mich. (See page 1127.)
Pittsburgh Reinforced Brazing & Machine Co., 2525 Liberty Ave., Pittsburgh, Pa.
Poorman, J. E., 1825 Bristol St., Philadelphia, Pa.
Porter & Co., W. S., 141-43 W. Austin Ave., Chicago, Ill.
Precision Machine Co., 1029 Superior St., Indianapolis, Ind.
Proviso Tool & Machine Co., 6 N. Eighth Ave., Maywood, Ill.
Racine Screw Works, 1501 Clark St., Racine, Wis. (See page 841.)
Raymond Engineering Corp., 307 Lafayette St., New York, N. Y.
Recording Devices Co., 554 W. Fifth St., Dayton, O.
Reed & Prince Mfg. Co., Duncan Ave., Worcester, Mass.
Reliable Machine Co., 5320 St. Clair Ave., N. E., Cleveland, O.
Reliance Engineering Co., Lansing, Mich.
Republic Tool & Mfg. Co., 1399-1401 W. Ninth St., Cleveland, O. (Jobbers.) (See page 369.)
Rhode Island Tool Co., Providence, R. I.
Ross Machine Co., 712-13-15 W. Seventh St., Lafayette, Ind.
Royal Machine & Foundry Co., 388-90 Division St., Oshkosh, Wis. (See page 503.)
Rutter, Arthur T., 256 Broadway, New York, N. Y.
Ryerson & Son, Joseph T., Chicago, Ill. (Sole Distributors for Comradson Machine Tool Co., Green Bay, Wis.) (See page 111.)
S. A. Machine Co., 2114 E. Woodbridge St., Detroit, Mich.
S-P Mfg. Co., 872 E. 72nd St., Cleveland, O.
St. Louis Screw Co., Clarence & Bulwer Aves., St. Louis, Mo.
Sandow Tool Co., 570-76 W. Broadway, New York, N. Y.
Sanford Mfg. Co., F. C., 2060 Fairfield Ave., Bridgeport, Conn.
Saxon Mfg. Co., 1034-40 Grand Ave., Toledo, O.
Schaefer Mfg. Co., Pearl St., Berlin, Wis.
Scovill Mfg. Co., Waterbury, Conn. (See page 845.)
Scott & Fitzer Machine Co., Locust Ave., Cleveland, O.
Screw Machine Products Corp., 1012 Eddy St., Providence, R. I.
Seiss Mfg. Co., Phillips Ave. & N. Y. C. Ry., Toledo, O.
Service Gear & Machine Co., Second & Buttonwood Sts., Reading, Pa.
Shambow Shuttle Co., Woonsocket, R. I.
Shawmut Iron & Wire Works, 97 Tileston St., Everett, Mass.
Sherman-Klove Co., 4519-23 W. Harrison St., Chicago, Ill. (See page 719.)
Simmons Mfg. Co., 3405-11 Perkins Ave., Cleveland, O.
Simplex Steel Stamping Co., 1926-28 Gravois Ave., St. Louis, Mo.
Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
Smith Mfg. Co., F. H., 3037-47 Carroll Ave., Chicago, Ill.
Snow & Co., Albert E., 253 Broadway, New York, N. Y.
Spacke Machine & Tool Co., 600 Madison Ave., Indianapolis, Ind.
Spafford Machine Screw Works, 516 Asylum St., Hartford, Conn.
Specialty Products Co., 494 Mulberry St., Newark, N. J.
Spencer's Sons, I. S., Fair St., Guilford, Conn.
Standard Automatic Tool Co., 1620 Racine St., Racine, Wis.
Standard Pressed Steel Co., Philadelphia, Pa.
Standard Screw Products Co., 2559 Bellevue Ave., Detroit, Mich.
Standard Separator Co., Milwaukee, Wis.
Standard Turnbuckle Co., Corry, Pa.
Stearns Aero Parts Co., 203 St. Clair Ave., N. E., Cleveland, O.
Steele & Johnson Mfg. Co., 779 S. Main St., Waterbury, Conn.
Steger & Sons Piano Mfg. Co. (Industrial Division), Steger, Ill.
Steinen & Co., Wm., 297 Washington St., Newark, N. J.
Stephans Nut & Bolt Co., Main & Crawford Sts., Pawtucket, R. I.
Sterling Cork & Seal Co., 1612 Oakwood Ave., Toledo, O.
Sterling Specialty Co., New Comerstown, O.
Stiles Mfg. Co., St. Louis, Mo. (See page 521.)
Swope-McCracken Co., 73 Monroe Ave., Detroit, Mich.
Thomaston Mfg. Co., Thomaston, Conn.
Tock Screw Machine Products Corp., 199-203 Eighth St., Long Island City, N. Y.
Toledo Automotive Products Co., 2240 Smead Ave., Toledo, O. (See page 1111.)
Torrington Mfg. Co., 70 Franklin St., Torrington, Conn.

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Homan Ave. & Fillmore St., Chicago

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SCREW Machine Products to Order (Continued)

Union Cap Screw Co., 2262 Hendrie Ave., Detroit, Mich.

Union Tool Co., 48 E. River St., Orange, Mass.

U. S. Automatic Co., Amherst, O.

U. S. Metal Goods Co., 5211 Euclid Ave., Cleveland, O. (See page 685.)

Universal Machine Co., 501-09 E. Preston St., Baltimore, Md.

Up-to-Date Machine Works, 2915 Wabash Ave., Chicago, Ill. (See page 1093.)

Vahan Products Co., E. 73rd St. & St. Clair Ave., N. W., Cleveland, O.

Viking Tool & Machine Co., 243-49 44th St., Brooklyn, N. Y.

Vogel & Bros., Wm., Brooklyn, N. Y. (See page 433.)

Ware Bros., Automatic Products, 224 N. Ada St., Chicago, Ill.

Waterbury Brass Goods Corp., 160 Washington Ave., Waterbury, Conn.

Waterbury Mfg. Co., 236 Grand St., Waterbury, Conn.

Watkins & Co., D. M., 95 Pine St., Providence, R. I.

Watkins Nut Co., 2013 Franklin St., Detroit, Mich.

Weiss, L. T., 295 Taaffe Pl., Brooklyn, N. Y.

Wellman Products Co., 1444 E. 49th St., Cleveland, O.

Western Automatic Machine Screw Co., Elyria, O. (See page 659.)

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

Western Screw-Products Co., St. Louis, Mo. (See page 1177.)

Wheeler & Son, Frank, 55 Stone St., Meriden, Conn.

White Mfg. Co., Goshen, Ind.

Wicaco Screw & Machine Works, Seventh & Wood Sts., Philadelphia, Pa.

Wilton Machine Tool Co., 84 Linden Park St., Boston, Mass.

Wisconsin Machinery & Mfg. Co., Milwaukee, Wis. (See page 837.)

Wolverine Brass Works, 620 Monroe Ave., Grand Rapids, Mich.

Wood & Spencer Co., 1930 E. 61st St., Cleveland, O.

Worcester Machine Screw Co., 26 Haviland St., Worcester, Mass.

York Screw Works, York, Pa.

Ypsi Screw Co., Ypsilanti, Mich.

Zarem & Rose, 174 Centre St., New York, N. Y.

Zeigler Mfg. Co., 216 S. Central Ave., Alexandria, Ind.

Zumbach Machine Repair Co., 134-36 W. 54th St., New York, N. Y.

SCREW MACHINES—See Machines, Screw

SCREW PITCH GAGES—See Gages, Screw Pitch

SCREW PLATES—See Taps and Dies

SCREWS, Cap and Set

Aetna Screw & Bolt Co., 104 S. Clinton St., Chicago, Ill.

Allen Mfg. Co. 185 Sheldon St., Hartford, Conn.

Atlas Bolt & Screw Co., Cleveland, O. (See page 845.)

Automatic Products Co., 1145 W. Grand Blvd., Detroit, Mich. (See page 835.)

Barkelew Metal Products Co., Richard & Bowen Sts., Dayton, O. (See page 657.)

Chicago Screw Co., Homan Ave. & Fillmore St., Chicago, Ill. (See pages 837 and 841.)

Cincinnati Screw Co., Twightwee, O. (See page 701.)

Clark Bros. Bolt Co., Milldale, Conn.

Cleveland Wrought Products Co., W. 58th St., South of Dennison Ave., Cleveland, O. (See page 875.)

Columbus Bolt Works Co., Columbus, O. (See page 155.)

Corbin Screw Corp., High St., New Britain, Conn.

Crittenden Mfg. Co., 3380 Washington St., Boston, Mass.

Curtis Screw Works, 17 Gull St., Buffalo, N. Y.

Detroit Screw Works, 1494 Franklin St., Detroit, Mich.

Diebel, A. J., 976 Woodward Ave., Detroit, Mich. (Michigan, Indiana and Ohio Distributors for Barkelew Screws.) (See page 543.)

Empire City Screw Products Co., 12 W. 62d St., New York, N. Y. (See page 659.)

Federal Nut, Bolt & Machine Co., 1639 Collamer Ave., Cleveland, O.

Federal Screw Works, 4725 Ellery St., Detroit, Mich.

Ferry Cap & Set Screw Co., Scranton Rd., Cleveland, O. (See page 837.)

Foster Bolt & Nut Mfg. Co., 3556 E. 72d St., Cleveland, O. "Perfection."

Foster—See New Haven Screw Co.

Fostoria Screw Corp., E. Railroad St., Fostoria, O.

Gordon-Little Co., 122-24 N. Senate Ave., Indianapolis, Ind.

Harper Screw Works, F. C., 29 S. Clinton St., Chicago, Ill.

Hartford Machine Screw Co., Hartford, Conn. (See page 839.)

Haskell Mfg. Co., Wm. H., 24 Commerce St., Pawtucket, R. I.

Illinois Mfg. & Supply Co., 1455 S. Michigan Ave., Chicago, Ill.

Mac-It Parts Co., Manheim Pike, Lancaster, Pa.

May Automatic Products Co., 14th & Howard Sts., Detroit, Mich. (See page 839.)

Metzger Welding Co., 1635 Blue Rock St., Cincinnati, O. (See page 1151.)

Muncie Cap & Set Screw Co., Muncie, Ind. (See page 1241.)

National-Acme Co., Cleveland, O. (See page 657.)

National Lock Co., Rockford, Ill. (See page 843.)

National Machine Products Co., 4850 Bellevue Ave., Detroit, Mich.

New Haven Screw Co., 191-93 Foster St., New Haven, Conn. "Foster."

Ottemiller Co., Wm. H., Pattison St., & M. & P. R. R., York, Pa.

Peninsular Milled Screw Co., 6910 E. Lafayette St., Detroit, Mich.

Perfection—See Foster Bolt & Nut Mfg. Co.

Phoenix Mfg. Co., Loraine and Grand River Aves., Detroit, Mich. (See page 1127.)

Pittsburgh Screw & Bolt Co., Preble Ave., (N. S.), Pittsburgh, Pa.

Reed & Prince Mfg. Co., Duncan Ave., Worcester, Mass.

Republic Tool & Mfg. Co., 1399-1401 W. Ninth St., Cleveland, O. (Jobbers.) (See page 369.)

Rhode Island Tool Co., Providence, R. I.

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SCREWS, Cap and Set (Continued)

Rochester Machine Screw Co., 15 Caledonia St., Rochester, N. Y.

Russell & Erwin Mfg. Co., New Britain, Conn.

St. Louis Screw Co., Clarence & Bulwer Aves., St. Louis, Mo.

Scovill Mfg. Co., Waterbury, Conn. (See page 845.)

Sherman-Klove Co., 4519-23 W. Harrison St., Chicago, Ill. (See page 719.)

Shimer & Sons, Samuel J., Milton, Pa.

Spafford Machine Screw Works, 516 Asylum St., Hartford, Conn.

Standard Pressed Steel Co., Philadelphia, Pa. "Standco."

Standco—See Standard Pressed Steel Co.

Steel Products Co., Cleveland, O. (See page 153.)

U. S. Automatic Co., Amherst, O.

Union Cap Screw Co., 2262 Hendrie Ave., Detroit, Mich.

Upson Nut Co., Unionville, Conn.

Victor Screw Works, Detroit, Mich. (See page 1091.)

Western Automatic Machine Screw Co., Elyria, O. (See page 659.)

Western Screw-Products Co., St. Louis, Mo. (See page 1177.)

Worcester Machine Screw Co., 26 Haviland St., Worcester, Mass.

York Screw Works, York, Pa.

SCREWS, Coach and Lag

Atlas Bolt & Screw Co., Cleveland, O. (See page 845.)

Clark Bros. Bolt Co., Milldale, Conn.

Falls Rivet Co., Kent, O.

Foster Bolt & Nut Mfg. Co., 3556 E. 72nd St., Cleveland, O. "Perfection."

Haskell Mfg. Co., Wm. H., 24 Commerce St., Pawtucket, R. I.

National Screw & Tack Co., 2440 E. 75th St., Cleveland, O.

Oliver Iron & Steel Co., Tenth & Muriel Sts., Pittsburgh, Pa.

Perfection—See Foster Bolt & Nut Mfg. Co.

Republic Iron & Steel Co., Republic Bldg., Youngstown, O.

Upson Nut Co., Scranton Rd., Cleveland, O.

SCREWS, LAG—See Screws, Coach and Lag

SCREWS, Machine

Aetna Screw & Bolt Co., 104 S. Clinton St., Chicago, Ill.

American Screw Co., 21 Stevens St., Providence, R. I.

Atlas Bolt & Screw Co., Cleveland, O. (See page 845.)

Blake & Johnson Co., Waterbury, Conn. (See page 847.)

Bridgeport Screw Co., Williston St. & Union Ave., Bridgeport, Conn.

Champion Mfg. Co., 74th St. & Kimbark Ave., Chicago, Ill. (See page 439.)

Chicago Screw Co., Homan Ave. & Fillmore St., Chicago, Ill. (See pages 837 and 841.)

Corbin Screw Corp., High St., New Britain, Conn.

General Mfg. Co., 66 N. Elm St., Waterbury, Conn.

Gordon-Little Co., 122-24 N. Senate Ave., Indianapolis, Ind.

Hartford Machine Screw Co., Hartford, Conn. (See page 839.)

Hubbell, Harvey, State St. & Bostwick Ave., Bridgeport, Conn.

Keystone Screw Co., Yardley, Pa.

Liberty Screw Co., 383 Shrewsbury St., Worcester, Mass.

May Automatic Products Co., 14th & Howard Sts., Detroit, Mich. (See page 839.)

National Lock Co., Rockford, Ill. (See page 843.)

National Screw & Tack Co., 2440 E. 75th St., Cleveland, O.

New Haven Screw Co., 191-93 Foster St., New Haven, Conn.

Pheoll Mfg. Co., 5750 W. Roosevelt Rd., Chicago, Ill.

Progressive Mfg. Co., 52 Norwood St., Torrington, Conn.

Ramsdell Specialty Co., 766 W. Boylston St., Worcester, Mass.

Reed & Prince Mfg. Co., Duncan Ave., Worcester, Mass.

Russell & Erwin Mfg. Co., New Britain, Conn.

St. Louis Screw Co., Clarence & Bulwer Aves., St. Louis, Mo.

Scovill Mfg. Co., Waterbury, Conn. (See page 845.)

Steele & Johnson Mfg. Co., 770 S. Main St., Waterbury, Conn.

Waterbury Mfg. Co., 236 Grand St., Waterbury, Conn.

Western Automatic Machine Screw Co., Elyria, O. (See page 659.)

Worcester Machine Screw Co., 26 Haviland St., Worcester, Mass.

SCREWS, SET—See Screws, Cap and Set

SCREWS, Thumb

Atlas Bolt & Screw Co., Cleveland, O. (See page 845.)

Chicago Screw Co., Homan Ave. & Fillmore St., Chicago, Ill. (See pages 837 and 841.)

Eberhard Mfg. Co., 2784 Tennyson Rd., Cleveland, O.

Haskell Mfg. Co., Wm. H., 24 Commerce St., Pawtucket, R. I.

Peninsular Milled Screw Co., 6910 E. Lafayette St., Detroit, Mich.

Rochester Machine Screw Co., 15 Caledonia St., Rochester, N. Y.

St. Louis Screw Co., Clarence & Bulwer Aves., St. Louis, Mo.

Screw Machine Products Corp., 1012 Eddy St., Providence, R. I.

Steele & Johnson Mfg. Co., 779 S. Main St., Waterbury, Conn.

Western Automatic Machine Screw Co., Elyria, O. (See page 659.)

Worcester Machine Screw Co., 26 Haviland St., Worcester, Mass.

SCREWS, Wood

Aetna Screw & Bolt Co., 104 S. Clinton St., Chicago, Ill.

American Screw Co., 21 Stevens St., Providence, R. I.

Atlantic Screw Works, Charter Oak Ave., Hartford, Conn.

Bridgeport Screw Co., Williston St. & Union Ave., Bridgeport, Conn.

Champion Mfg. Co., 74th St. & Kimbark Ave., Chicago, Ill. (See page 439.)

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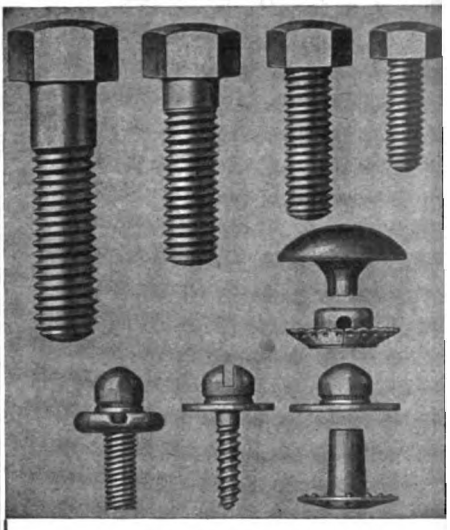

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SCREWS, Wood (Continued)

Continental Wood Screw Co., Mt. Pleasant St., New Bedford, Mass.

Corbin Screw Corp., High St., New Britain, Conn.

Eagle Lock Co., 105 Chambers St., New York, N. Y.

Gordon-Little Co., 122-24 N. Senate Ave., Indianapolis, Ind.

National Screw & Tack Co., 2440 E. 75th St., Cleveland, O.

Reed & Prince Mfg. Co., Duncan Ave., Worcester, Mass.

Russell & Erwin Mfg. Co., New Britain, Conn.

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.

Wire Goods Co., 28 Union St., Worcester, Mass.

SEALING COMPOUNDS—See Compounds, Puncture Sealing

SEALS, Motor Heat

Hammond, Laurens, 2170 E. Jefferson Ave., Detroit, Mich.

SEARCHLIGHTS, ACETYLENE — See Lamps, Acetylene; also Headlights, Tractor Acetylene

SEARCHLIGHTS, ELECTRIC — See Headlights, Electric; also Lights, Spot

SEARCHLIGHTS, SWIVEL ELECTRIC—See Lights, Spot

SEAT BACKS—See Backs, Metal Seat; also Bendings, Wood

SEAT BENDINGS—See Bendings, Wood

SEAT COVERS—See Covers, Slip

SEAT CUSHIONS—See Cushions, Seat

SEATING MACHINES — See Machines, Valve Seating and Grinding

SEATS and Attachments, Motorcycle Tandem

A-K—See Angsten-Kox Co.

Angsten-Kox Co., 221-23 W. Randolph St., Chicago, Ill. "A. K."

Cabinet Spring Seat Co., 175 Market St., Paterson, N. J.

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 545.)

F-N.—See Fentress-Newton Mfg. Co.

Fentress-Newton Mfg. Co., 1011-19 W. Lafayette Blvd., Detroit, Mich "F-N."

SEATS, Supplementary

(Auxiliary or Supplementary Seats including folding chairs and stools)

American Auto Top Companies, 2 Hudson St., New York, N. Y. "Victor."

Amesbury Brass & Foundry Co., Amesbury, Mass.

Bailey-Drake Co., 1120 S. Michigan Ave., Chicago, Ill. (Sole Distributors for Defiance Welding Co., Defiance, O.) "Boko."

Boko—See Bailey-Drake Co.

Buffington & Co., C. A., Berkshire, N. Y.

Defiance Welding Co.—See Bailey-Drake Co.

Empire Gear & Top Co., 207 N. 22d St., Philadelphia, Pa.

Handy-Pandy—See Pandolfo Mfg. Co.

Hill Mfg. Co., 25-27 Fuller St., Buffalo, N. Y.

Hodge & Graves Co., Amesbury, Mass. "Luxury."

Ideal—See Metal Stamping Co.

Ideal Brass Works, 560 N. Elder Ave., Indianapolis, Ind.

Imperial Bit & Snap Co., Racine, Wis. (See page 883.)

Jitney—See Metal Stamping Co.

Locke Auto Supply Co., 15116 Detroit Ave., Cleveland, O. (Sole Distributors for Neff Co., Cleveland, O.)

Luxury—See Hodge & Graves Co.

McKinnon Dash Co., Buffalo, N. Y. (See page 831.)

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y. "Ideal." "Peerless," "Jitney."

Neff Co.—See Locke Auto Supply Co.

Pandolfo Mfg. Co., St. Cloud, Minn. "Handy-Pandy." (See page 157.)

Peerless—See Metal Stamping Co.

Polson Mfg. Co., 1750 Main St., Buffalo, N. Y.

Victor—See American Auto Top Companies.

Victor Steel Stamping Co., 3102 Downing St., Denver, Colo.

SEATS, Supplementary, for Fords

(For attaching to inside of tonneau doors)

McKinnon Dash Co., 252 Amherst St., Buffalo, N. Y.

SEATS, Tractor

Adjustable Spring Seat Co., Society for Savings Bldg., Cleveland, Ohio.

Sykes Metal Lath & Roofing Co., Niles, O.

SEATS, Special Truck

Flexo Sales Co., 394 Clinton St., Milwaukee, Wis.

SECONDARY WIRE—See Wire, Insulated

SEGAR LIGHTERS—See Lighters, Electric Cigar

SELF-FLUXING SOLDER — See Flux, Soldering; also Solder, Bar and Wire

SELF-HARDENING CUTTING STEEL—See Steel, Self-Hardening Cutting

SEMAPHORES—See Signals, Direction Indicating or Traffic

SENSITIVE DRILLS—See Drilling Machines, Sensitive

SEPARATING TOOLS—See Tools, Spring Leaf Separating

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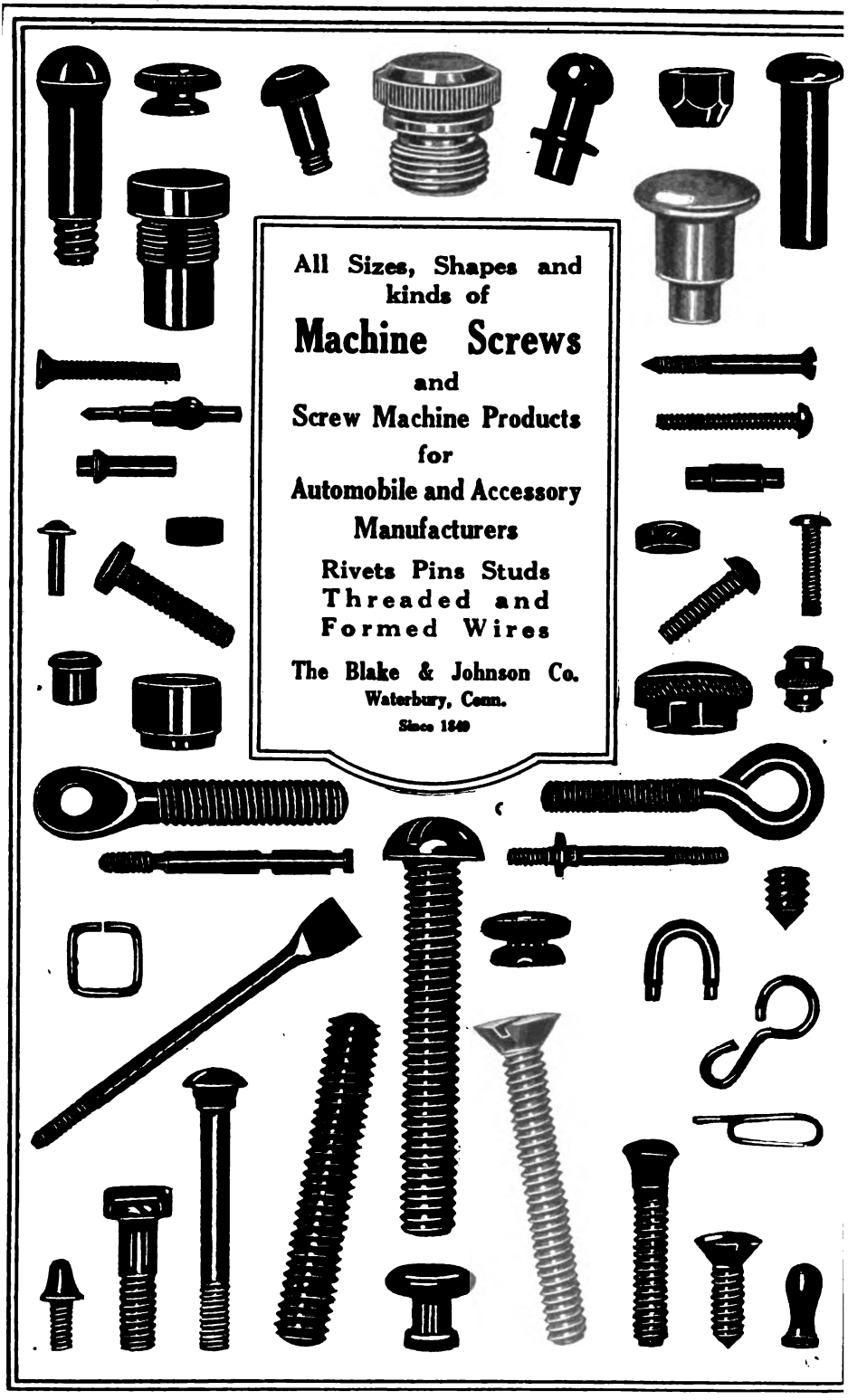

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SEPARATORS, BATTERY — See Separators, Storage Battery

SEPARATORS, Bow

(See also Holders, Top)

Amesbury Brass & Foundry Co., Amesbury, Mass.

Anchor—See North & Judd Mfg. Co.

Attwood Brass Works, Grand Rapids, Mich. (See page 1195.)

Auto Specialties Mfg. Co., St. Joseph, Mich. (See page 421.)

Bair—See Auto Specialties Mfg. Co.

Desoco—See Detroit Socket Co.

Detroit Socket Co., 2744 W. Jefferson Ave., Detroit, Mich. "Desoco."

Eberhard Mfg. Co., 2784 Tennyson Rd., Cleveland, O.

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn. "Anchor."

Pennsylvania Rubber Co., Jeannette, Pa.

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

SEPARATORS, GASOLINE—See Strainers, Gasoline

SEPARATORS, Oil

Oil & Waste Saving Machine Co., Real Estate Trust Bldg., Philadelphia, Pa.

SEPARATORS, Storage Battery

(Wood and Composition Separators; for Rubber Separators—See Rubber, Hard)

American Storage Battery Parts Co., 650-60 E. 163rd St., Cleveland, O. (Jobbers.) (See page 1195.)

Arthur Storage Battery Supply Co., 2540-42 Cottage Grove Ave., Chicago, Ill. (See page 163.)

Benson Electric Co., 704 Southwest Blvd., Kansas City, Mo.

Darling Co., Len H., Addison, Mich.

Ferry Mfg. Co., 2119 S. Fourth St., St. Louis, Mo.

Heath Mfg. Co., Greenville, Mich. (See page 1197.)

Samson Battery Mfg. Co., Fort Wayne, Ind.

Smith Co., Harrison, Oklahoma City, Okla.

Stewart Estate, William E., 14th & Elm Sts., Flint, Mich.

SERVICE STATIONS—See Stations, Electric Service

SET SCREWS—See Screws, Cap

SETS, Rivet

Braunsdorf-Mueller Co., Elizabeth, N. J.

Carver Tool Works, Spring Valley, N. Y.

Chanmon Mfg. Co., James H., 223-33 W. Erie St., Chicago, Ill. (See page 127.)

Kraemer & Co., Newark, N. J. (See page 711.)

Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."

Pexto—See Peck, Stow & Wilcox Co.

Red Devil—See Smith & Hemenway.

Rich Tool Co., Railway Exchange Bldg., Chicago, Ill. (See page 1017.)

Smith & Hemenway, 130 Colt St., Irvington, N. J. "Red Devil."

SETS, Wiring, for Fords

(Complete ignition wiring cut to lengths and fitted with necessary terminals)

Alcemo Mfg. Co., 120 Bridge St., Newark, N. J. (See page 247.)

Barcy-Nicholson Co., 2801-19 W. Fort St., Detroit, Mich.

Belden Mfg. Co., 2300 S. Western Ave., Chicago, Ill. (See page 1171.)

Faw, J. H., 27 Warren St., New York, N. Y. "Fawsco." (See page 241.)

Fawsco—See Faw, J. H.

Ferro Mfg. Co., 2011 Michigan Ave., Chicago, Ill. (See page 1197.)

Goodrich-Lenhart Mfg. Co., Hamburg, Pa. (See page 721.)

Grossman Auto Parts Co., White Plains, N. Y.

Midway Mechanical Co., St. Paul, Minn. (See page 667.)

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco."

White, J. M., 1116-22 Olive St., Philadelphia, Pa. (See page 849.)

SHACKLE BOLTS — See Bolts, Spring Shackle

SHACKLE LUBRICATORS—See Lubricators, Spring and Shackle Bolt

SHADES, HEADLIGHT—See Dimmers, Headlight

SHADES, SUN—See Shields, Sun

SHAFT COUPLINGS—See Couplings

SHAFT HOUSING BRACES FOR FORDS —See Braces, Drive Shaft Housing

SHAFT LOGS, MOTOR BOAT—See Logs, Motor Boat Shaft

SHAFT STEADY BEARINGS—See Bearings, Drive Shaft Steady

SHAFTING, Flexible

(For driving Speedometers, Odometers or Tachometers)

Breeze Mfg. Co., 255 South St., Newark, N. J.

Coates Clipper Mfg. Co., 237 Chandler St., Worcester, Mass.

Gem Mfg. Co., Goebel & Fulton Sts., Pittsburgh, Pa.

Ogden Mfg. Co., Plymouth, Ind.

Saco—See Speedometer Accessories.

Speedometer Accessories, Plymouth, Ind. "Saco."

Stow Flexible Shaft Co., 26th & Callowhill Sts., Philadelphia, Pa.

Stow Mfg. Co., 443 State St., Binghamton, N. Y.

Webb Mfg. Co., 245-47 N. J. R. R. Ave., Newark, N. J. (See page 851.)

White Dental Mfg. Co., S. S., 7 Union Sq. W., New York, N. Y. (See page 1019.)

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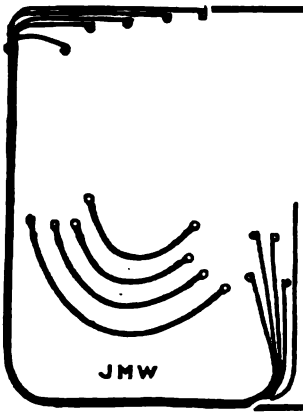

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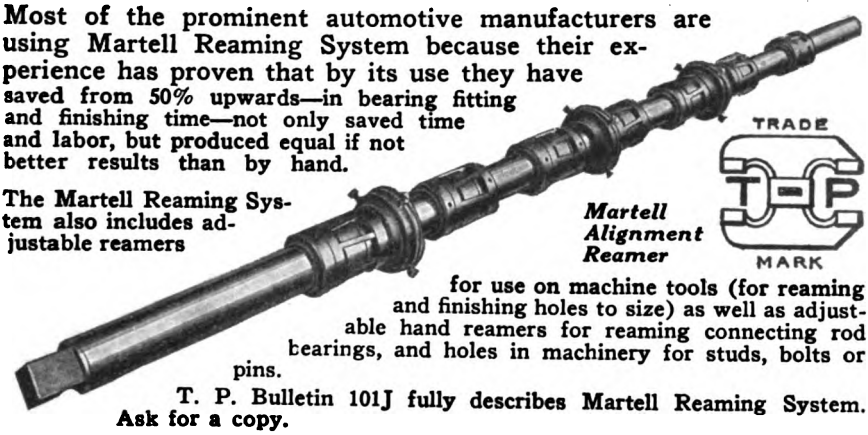

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SHAFTS, CAM—See Camshafts, Finished

SHAFTS, CLUTCH—See Shafts, Transmission

SHAFTS, CRANK—See Crankshafts, Finished

SHAFTS, FLEXIBLE—See Shafting, Flexible

SHAFTS, Propeller

(Complete Propeller Shaft assemblies to blue print or specification; for Universal Joints only—See Joints, Universal)

Arvac Mfg. Co., Anderson, Ind. (See page 543.)

Baker Gun & Forging Co., Batavia, N. Y. (See page 639.)

Blood-Bros. Machine Co., Allegan, Mich. (See page 543.)

Columbian Bronze Corp., 522 Fifth Ave., New York, N. Y.

Diebel, A. J., 976 Woodward Ave., Detroit, Mich. (Michigan, Indiana and Ohio Distributors for "Ream" Shafts.) (See page 543.)

Foreman, W. D., 1607 Prairie Ave., Chicago, Ill.

Hartford Automotive Parts Co., Hartford, Conn. "K-B." (See pages 764 and 765.)

Jessop & Thompson, 1421 S. Michigan Ave., Chicago, Ill.

K-B—See Hartford Automotive Parts Co.

Pick Co., Carl, West Bend, Wis. (See page 1047.)

R-S. Mfg. Co., Dayton, O. "Reim."

Reim—See R-S Mfg. Co.

Salisbury Axle Co., Jamestown, N. Y. (See page 1086.)

Snead & Co., Jersey City, N. J. (See page 609.)

Spicer Mfg. Corp., South Plainfield, N. J. (See page 541.)

Universal Machine Co., Bowling Green, O. (See page 545.)

SHAFTS, PROPELLER TRACTOR — See Shafts, Tractor Propeller

SHAFTS, PUMP—See Shafts, Transmission

SHAFTS, Rear Axle

Auto Engineering Co., 429-31 Bagg St., Detroit, Mich. (See page 91.)

Auto Gear & Parts Co., 291-97 Marietta St., Atlanta, Ga. (See page 489.)

Bauer Machine Co.—See Eckhouse & Co.

Butler-Edwards Electric Co., Easton, Pa.

Detroit Motor Parts Co., 133-35 W. Larned St., Detroit, Mich. (See page 551.)

Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Factory Distributors for Bauer Machine Co., Jeffersonville, Ind.)

Foreman, W. D., 1607 Prairie Ave., Chicago, Ill.

Gibbes Machinery Co., Wheat & Assembly Sts., Columbia, S. C.

Greer, Frederic, 525 W. Van Buren St., Chicago, Ill.

Jessop & Thompson, 1421 S. Michigan Ave., Chicago, Ill.

Lyon Co., Edward F., 1600-34 E. Euclid Ave., Detroit, Mich.

Marx Machine Tool Co., 210 Myrtle St., Detroit, Mich. (See page 851.)

Replacement Parts Co., 1012 Baltimore Ave., Kansas City, Mo. (See page 681.)

Service Gear & Machine Co., Second & Buttonwood Sts., Reading, Pa.

Spencer Metal Products Co., Spencer, O. (See page 766.)

Wayne Tool Co., 642 Catherine St., Detroit, Mich.

SHAFTS, Rear Axle, for Fords

Advance Tool Co.—See Gray Andrews Corp.

Allied Steel Products Co., 7 Walnut St., Aurora, Ill.

Angiers, 500 N. Vermilion St., Streator, Ill.

Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. (See page 81.)

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern and Southern Distributors for Spencer Shafts.) (See page 275.)

Bauer Machine Co.—See Eckhouse & Co.

Bridgers Co., J. D., Palmetto St. & Railroad Ave., Florence, S. C.

Butler-Edwards Electric Co., Easton, Pa.

Dunham Co., Thos., Aurora, Ill. (See page 167.)

Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Factory Distributors for Bauer Machine Co., Jeffersonville, O.)

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.

Foreman, W. D., 1607 Prairie Ave., Chicago, Ill.

Gibbes Machinery Co., Wheat & Assembly Sts., Columbia, S. C.

Gray Andrews Corp., 52 Vanderbilt Ave., New York, N. Y. (Sole Distributors for Advance Tool Co., Cincinnati, O.)

Grossman Auto Parts Co., White Plains, N. Y.

Jessop & Thompson, 1421 S. Michigan Ave., Chicago, Ill.

Lake Erie Metal Products Co., 1838 Central Ave., Cleveland, O.

Marx Machine Tool Co., 210 Myrtle St., Detroit, Mich. (See page 851.)

Niagara Motors Corp., Dunkirk, N. Y. (See page 943.)

Replacement Parts Co., 1012 Baltimore Ave., Kansas City, Mo. (See page 681.)

Salisbury Axle Co., Jamestown, N. Y. (See page 1086.)

Service Gear & Machine Co., Second & Buttonwood Sts., Reading, Pa.

Simmons Mfg. Co., 3405-11 Perkins Ave., Cleveland, O.

Spencer Metal Products Co., Spencer, O. (See page 766.)

U. S. Metal Goods Co., 5211 Euclid Ave., Cleveland, O. (See page 685.)

SHAFTS, Tractor Propeller

Hartford Automotive Parts Co., Hartford, Conn. "K-B." (See pages 764 and 765.)

K-B—See Hartford Automotive Parts Co.

SHAFTS, Transmission, Clutch and Pump

Marx Machine Tool Co., 210 Myrtle Ave., Detroit, Mich. (See page 851.)

Turner Machine & Mfg. Co., 31st & Genesee Sts., Kansas City, Mo.

SHAPERS, AIRCRAFT PROPELLER BLADE—See Machines, Aircraft Propeller Blade Shaping

SHAPERS, Metal

American Tool Works Co., Pearl St. & Eggleston Ave., Cincinnati, O.

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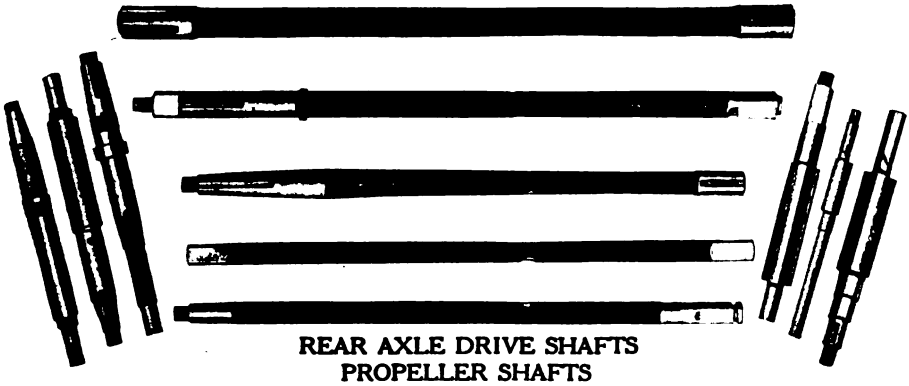

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SHAPERS, Metal (Continued)

Boynton & Plummer, Chester Depot, Vt.
Cincinnati Shaper Co., Elam St. & Garrard Ave., Cincinnati, O.
Cochrane-Bly Co., 15 St. James Pl., Rochester, N. Y.
Davis Machine Tool Co., 307 St. Paul St., Rochester, N. Y.
Gould & Eberhardt, Colt & Chancellor Aves., Irvington, N. J.
Hendey Machine Co., 105 Summer St., Torrington, Conn.
Juengst & Sons, Geo., Croton Falls, N. Y.
Kelly Co., R. A., W. Main St., Xenia, O.
Milwaukee Shaper Co., 1029 Coldspring Ave., Milwaukee, Wis.
Niles-Bement-Pond Co., 111 Broadway, New York, N. Y.
O & S—See Osborne & Sexton Machinery Co.
Ohio Machine Tool Co., Kenton, O.
Osborne & Sexton Machinery Co., Fourth & Russell Sts., Columbus, O. "O & S."
Potter & Johnston Machine Co., 1035 Newport Ave., Pawtucket, R. I.
Queen City Machine Tool Co., 1405 Sycamore St., Cincinnati, O.
R. M. Co.—See Rhodes Mfg. Co.
Rhodes Mfg. Co., 948 Park St., Hartford, Conn. "R. M. Co."
Rockford Machine Tool Co., 2400 Kiswaukee St., Rockford, Ill.
Smith & Mills Co., 2889-91 Spring Grove Ave., Cincinnati, O.
Stapf & Co., John B., Dunkirk, N. Y.
Stamco—See Streine Tool & Mfg. Co.
Steptoe Co., John, 2961 Colerain Ave., Cincinnati, O.
Stockbridge Machine Co., 68 Abbott St., Worcester, Mass.
Streine Tool & Mfg. Co., New Bremen, O. "Stamco."
Whipp Machine Tool Co., Sidney, O.

SHAPERS, Wood

Advance Machinery Co., Van Wert, O.
American Wood Working Machinery Co., 591 Lyell Ave., Rochester, N. Y.
Barker & Co., Wm., Pleasant & Wheeler Sts., Covington, Ky.
Bentel & Margedant Co., Hamilton, O.
Cordesman, Meyer & Co., 53-57 Central Ave., Cincinnati, O.
Cordesman-Rechtin Co., 215 Butler St., Cincinnati, O.
Crescent Machine Co., Leetonia, O.
Defiance Machine Works, 434 Perry St., Defiance, O.
Fay & Egan Co., J. A., 415 W. Front St., Cincinnati, O.
Hall & Brown Woodworking Machine Co., Broadway & Ninth St., St. Louis, Mo.
Jones Superior Machine Co., 1258-72 W. North Ave., Chicago, Ill.
Porter Machinery Co., C. O., 666 Front Ave., Grand Rapids, Mich.
Power & Co., L., 20 S. 23d St., Philadelphia, Pa.
Pryibil Machine Co., P., 512-24 W. 41st St., New York, N. Y.
Smith Machine Co., H. B., Smithville, N. J.
Whitney & Son, Baxter D., Winchendon, Mass. (See pages 477 and 853.)

SHEARS, Rotary

Grays—See Southwark Foundry & Machine Co.
Quickwork Co., St. Marys, O.
Southwark Foundry & Machine Co., 430 Washington Ave., Philadelphia, Pa. "Grays."
Yoder Co., Walworth Ave. & 55th St., Cleveland, O.

SHEAVES AND PULLEYS

(For Horn and Out-out Cables)

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

SHEET ALUMINUM—See Aluminum

SHEET ASBESTOS—See Asbestos

SHEET BRASS—See Brass, Sheet

SHEET CELLULOID—See Celluloid, Sheet

SHEET COPPER—See Brass and Copper, Sheet

SHEET FELT—See Felt, Sheet

SHEET FIBRE—See Fibre, Hard

SHEET METAL TESTING INSTRUMENTS—See Instruments, Metal Testing

SHEET PACKING—See Packing

SHEET RUBBER—See Rubber, Hard

SHEET STEEL—See Steel

SHELLAC—See Cement, Gasket

SHELLS, BOILER—See Shells, Copper

SHELLS, Copper Boiler

Randolph-Clowes Co., 334 Bank St., Waterbury, Conn.

SHELLS, Muffler for Fords

Expando—See Hudson Motor Specialties Co.
Hudson Motor Specialties Co., 1934 Arch St., Philadelphia, Pa. "Expando."

SHELVING, METAL—See Racks, Metal Tool

SHERARDIZING—See Galvanizing

SHIELD STRIPS—See Strips, Wind Shield Weather

SHIELDS, Aeroplane

Goodyear Tire & Rubber Co., 1144 E. Market St., Akron, O.

SHIELDS, Auxiliary Wind

Accessory Supply Co., 12th & Tracy Sts., Kansas City, Mo. "Asco."
American—See Perfection Windshield Co.
American Automobile Accessories Co., 1120 Broadway, Denver, Colo. "Sewell."
Apex—See Taylor-Southard Co.
Asco—See Accessory Supply Co.

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GIVES motoring comfort and style in any weather. Instantly adjusted to any position — double-tiltable — clear vision—no bars across the glass—no holes in glass —glass held firmly in perfect balance.

Supply houses and garages everywhere are making a quick turn-over on D-FLEKT-Os. Write today for details of our special sales co-operative plan.

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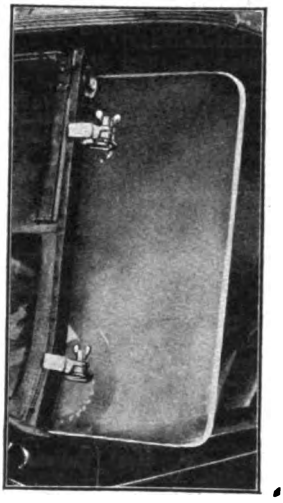
Mitchell Auxiliary Windshields



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SHIELDS, Auxiliary Wind (Continued)

Automotive Accessories, 523 N. Buckeye St., Kokomo, Ind. "Shureloc."

Automotive Supply Mfg. Co., 2005½ Main St., Dallas, Tex. "Wind-A-Way."

Bardeen Motor Sales Co., 312 E. 17th St., Kansas City, Mo.

Beedee Distributing Service, 613 W. Pico St., Los Angeles, Cal. (Sole Distributors for De Luxe Auto Mfg. Co., Los Angeles, Cal.) (See page 1137.)

Benzer Corp., Myrtle, Cooper and Webster Aves., Brooklyn, N. Y. (See page 359.)

D-Flekt-O—See Schonberg Mfg. Co.

Denver Wing Co., 2131 S. Michigan Ave., Chicago, Ill. "Duplex."

De Luxe Auto Mfg. Co.—See Beedee Distributing Service.

Detroit Auto Visor Co., 1326 Woodbridge St., E., Detroit, Mich.

Diamond Jay Dee Co., 1400 Michigan Ave., Chicago, Ill. (See page 569.)

Duplex—See Denver Wing Co.

Economic Mfg. Co., 5020 Montview Blvd., Denver, Colo.

Gartley-Weston Mfg. Co., Real Estate Exchange Bldg., Detroit, Mich. "Weston."

H. I.—See Hartman & Inman.

Hardware Mfg. Co., 1410 Dearborn St., Seattle, Wash.

Hartman & Inman, 157 W. 51st St., New York, N. Y. "H. I." (See page 855.)

Hillman Mfg. Co., 2317 E. 16th St., Los Angeles, Cal. "National." (See page 1107.)

Higgins Brass Works, J. C., Eighth & Main Sts., San Diego, Cal.

Johnston Mfg. Co., William R., 451-460 E. Ohio St., Chicago, Ill. (See page 1075.)

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representative for Rain-Sun Vision Shield Co., Los Angeles, Cal.) (See page 689.)

Jubilee Mfg. Co., 1929 S. 20th St., Omaha, Neb.

Kozy—See Thomas-Bray Co.

Krimsky, Emil J., 1440 S. Michigan Ave., Chicago, Ill.

Mitchell Automotive Co., 157 Christopher St., New York, N. Y. (See page 853.)

National—See Hillman Mfg. Co.

Pacific Windshield Co., 814 S. Olive St., Los Angeles, Cal.

Perfection Co., 400 W. Ohio St., Chicago, Ill. "Adjusto." (See page 1073.)

Perfection Windshield Co., Indianapolis, Ind. (See page 855.)

Rain-Sun Vision Shield Co.—See Jonas, C. N. & F. W.

Ross & Co., A. M., Temple Theatre Bldg., Ilion, N. Y. "Utility."

Safetee-Glass Co., 326 N. Broad St., Philadelphia, Pa.

Schonberg Mfg. Co., 728 W. Madison St., Chicago, Ill. "D-Flekt-O." (See page 853.)

Se-Clear—See Zenith Products Co.

Sewell—See American Automobile Accessories Co.

Shureloc—See Automotive Accessories.

Standard Corp., Outlook Bldg., Columbus, O.

Star Wing Co., 170 W. Randolph St., Chicago, Ill. (See page 855.)

Taylor-Southard Co., 206 Wells St., Milwaukee, Wis. "Apex."

Thomas-Bray Co., Provident Bk. Bldg., Cincinnati, O. "Kozy."

Thompson Co., Robert, 1015 S. Grand Ave., Los Angeles, Cal. (See page 1119.)

Utility—See Ross & Co.

W. B.—See Wildenberg Bros.

Weston—See Gartley-Weston Mfg. Co.

Wildenberg Bros., 356 W. 50th St., New York, N. Y. "W. B."

Wind-A-Way—See Automotive Supply Mfg. Co.

Zenith Products Co., Spring Lake, Mich. "Se Clear."

SHIELDS, FOOT PEDAL, FOR FORDS—See Deflectors, Heat, for Fords

SHIELDS, METAL RADIATOR—See Covers, Metal Radiator

SHIELDS, Motorcycle Knee

Heinz Motor Co., 611 W. North Ave., Baltimore, Md.

Standard Metal Mfg. Co., 237 Chestnut St., Newark, N. J.

SHIELDS, Motorcycle Wind

Heinz Motor Co., 611 W. North Ave., Baltimore, Md. "H. M. C."

H. M. C.—See Heinz Motor Co.

Shillan, Beck & Co., 68 E. 131st St., New York, N. Y.

SHIELDS, RADIATOR—See Covers, Radiator

SHIELDS, RAIN—See Visors and Rain Shields, Top; also Shields, Sun and Rain

SHIELDS, SPARK PLUG POINT—See Protectors, Spark Plug Point

SHIELDS, Sun and Rain

(Metal frame covered with leather fabric or celluloid to be attached to the windshield. For Top Visors—See Visors and Rain Shields, top)

Accessory Supply Co., 12th & Tracy Sts., Kansas City, Mo. "Asco."

All-Weather—See Auto Visor Co.

Asco—See Accessory Supply Co.

Auto Radiator Shutter Co., 21 Callahan Blk., Dayton, O. "Doty."

Auto Sun Shield Corp., 380 Main St., East Orange, N. J. (See page 937.)

Auto Visor Co., 3328 N. Broad St., Philadelphia, Pa. "All-Weather."

Cathcart, C. A., 222 Massachusetts Ave., Boston, Mass. "Triplex."

Code Mfg. Co., Chicago, Ill. (See pages 857 and 1155.)

De Luxe—See Wedler-Shuford Co.

Detroit Auto Visor Co., 1326 Woodbridge St., E., Detroit, Mich.

Detroit Radiator & Specialty Co., 4835 Woodward Ave., Detroit, Mich.

Diamond Jay Dee Co., 1400 Michigan Ave., Chicago, Ill. (See page 569.)

Doty—See Auto Radiator Shutter Co.

Economic Mfg. Co., 5020 Montview Blvd., Denver, Colo.

Essenkay Products Co., 220 W. Superior St., Chicago, Ill. "Mayer."

Gabel Co., A. H., Goodman St. and Monroe Ave., Rochester, N. Y. (See page 1125.)

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. "Toptex." (See pages 174 and 175.)

Hamilton Products Co., 413-23 S. Fifth St., Minneapolis, Minn. (See page 1053.)

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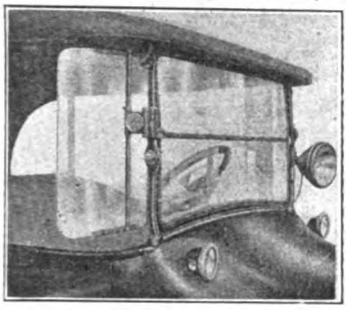


Perfection Side Windshields

Perfection Side Windshields
Perfection-Hartford Tonneau Windshields

Enclosed car comfort for open models

Add to the pleasure of motoring and improve the appearance of the most beautiful automobiles. They keep out rain, snow and dust. They break the annoying back draught.

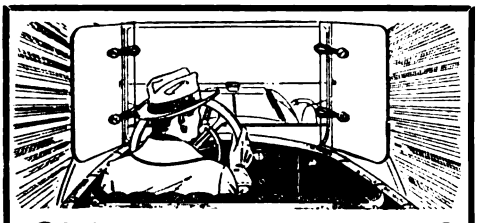
Patented October 7, 1919; May 25, 1920, and July 20, 1920

Write for full information

PERFECTION WINDSHIELD CO.

Manufacturers and Distributors

Indianapolis, U. S. A.



STAR GLASS Windshield WINGS

Are simple in construction and easily attached to any car.

They stop that draught on the back of the neck.

They deflect the wind, rain and dust in summer and obviate the necessity for curtains in winter.

They not only add comfort, but instantly catch the admiring eye of the public.

They can be instantly shifted to any angle by simply pushing them around to the desired position. If you want more air, turn them to a forward angle.

Star Wings have no holes in the glass to weaken it, and can not rattle.

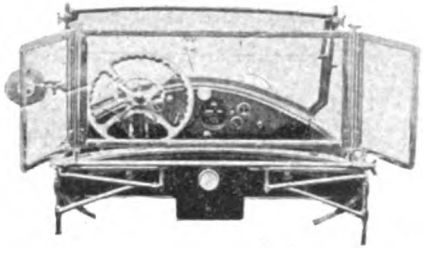
Glass comes in regular lengths, 18 and 20 inches. Other lengths supplied as required. Pleased to furnish electros for your catalogue.

Special fittings for Packard, Marmon and Locomobile.

Write for prices, complete with glass, and for fixtures only.

STAR WING COMPANY

170 West Randolph Street, Chicago



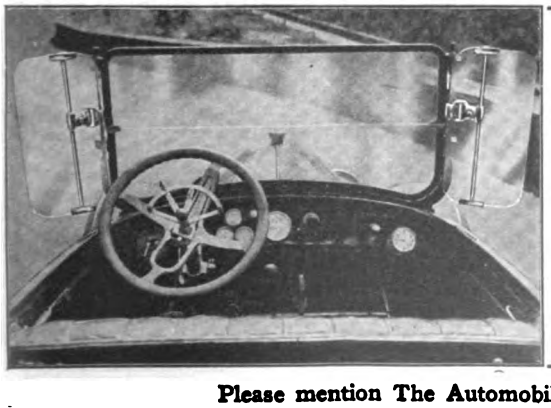
THE PERKINS
TONNEAU WINDSHIELD

Adds dignity and luxurious comfort to any car. Adjustable to any desired position or angle. Made of polished plate glass mounted in ornamental nickeled metal frame of ingenious construction.

The demand for tonneau windshields is steadily growing and dealers are selling them in ever increasing numbers. The Perkins Tonneau Windshield satisfies the demands of the most exacting motorists. Terms to the trade on request.

THE PERKINS TONNEAU WINDSHIELD CO. INC.

1931 Broadway - - - New York City



H. I.
Wind Deflectors

Made to fit all cars. Adds to the joy of motoring. A protection against wind, dust and rain. Deflectors can be attached to windshield in few seconds. Adjustable wing nut enables car owner to set them at any angle. In hot weather, by reversing position of wind deflectors, more air is caused to circulate into the car.

Write for terms to the trade.

Hartman & Inman, Inc.

157 W. 51st St. New York

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SHIELDS, Sun & Rain (Continued)

Hillman Mfg. Co., 2317 E. 16th St., Los Angeles, Cal. "National." (See page 1107.)

Horat & Co., Lafayette, Ind. "Lafayette." (See page 857.)

Jessop & Thompson, 1421 S. Michigan Ave., Chicago, Ill. (Sole Distributors for Pickard Co., T. W., Columbus, O.)

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representative for Rain-Sun Vision Shield Co., Los Angeles, Cal.) (See page 689.)

Lafayette—See Horat Co.

Laughlin & Schuler, Kimball Bldg., Evansville, Ill.

Loudon, Inc., 1303 W. Lake St., Minneapolis, Minn.

Mayer—See Essenkay Products Co.

Model & Metalwork Mfg. Co., 120 Opera Pl., Cincinnati, Ohio. "See-Wel."

National—See Hillman Mfg. Co.

Picard Co., T. W.—See Jessop & Thompson.

Powers Mfg. Co., Waterloo, Iowa. (See page 593.)

Rain-Sun Vision Shield Co.—See Jonas, C. N. & F. W.

Rex Mfg. Co., Connersville, Ind. (See page 1121.)

Safetee-Glass Co., 326 N. Broad St., Philadelphia, Pa.

Se-Clear—See Zenith Products Co.

See-Wel—See Model & Metalwork Mfg. Co.

Toptex—See Gemco Mfg. Co.

Triplex—See Cathcart, C. A.

U. S. Auto Equipment Co., Suite 312, Montgomery Bldg., Milwaukee, Wis. (See page 909.)

Ward Mfg. Co., E. T., 1150 Washington Blvd., Oak Park, Ill. (See page 863.)

Wedler-Shuford Co., 19th & Locust Sts., St. Louis, Mo. "De Luxe."

Wright Mfg. Co., 11 Second St., S. E., Minneapolis, Minn. (Sole selling agents for Clear View Mfg. Co., Minneapolis, Minn.)

Zenith Products Co., Spring Lake, Mich. "See-Clear."

SHIELDS, Tonneau

(Special adjustable shields for the protection of rear seat passengers in open cars)

Auster—See Fleetwood Metal Body Co.

Beatonson—See Sharrer Patent Top Co.

Bentel—See Thompson Co.

Clark & Son, A. N., Broad St., Plainville, Conn.

Fleetwood Metal Body Co., Fleetwood, Pa. "Auster."

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. "Tonno." (See pages 174 and 175.)

Higgins Brass Works, J. C., Eighth & Main Sts., San Diego, Cal.

J. H.—See Tonneau Shield Co.

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representative for Rain-Sun Vision Shield Co., Los Angeles, Cal.) (See page 689.)

Perfection-Hartford—See Perfection Windshield Co.

Perfection Windshield Co., Indianapolis, Ind. "Perfection-Hartford." (See page 855.)

Perkins Tonneau Windshield Co., 1931 Broadway, New York, N. Y. (See page 855.)

Rain-Sun Vision Shield Co.—See Jonas, C. N. & F. W.

Sharrer Patent Top Co., 250 W. 54th St., New York, N. Y. (Importers.) "Beatonson." (See page 1001.)

Sterling Top & Equipment Co., 518-22 W. 57th St., New York, N. Y.

Thompson Co., Robert, 1015 S. Grand Ave., Los Angeles, Cal. "Bentel." (See page 1119.)

Tonneau Shield Co., 1777 Broadway, New York, N. Y. "J. H." (See page 857.)

Tonno—See Gemco Mfg. Co.

SHIELDS, TOP—See Visors, Top

SHIELDS, Wind

Ackerman—See Smith & Co.

Ainsworth Mfg. Co., 256 Dubois St., Detroit, Mich.

Alexander Mfg. Co., J., 1991 Broadway, New York, N. Y.

Auto Wind Shield Co., University Rd., Cambridge, Mass.

Badger Mfg. Corp., Milwaukee, Wis. (See page 173.)

Banker Wind Shield Co., Ellsworth & Negley Aves., Pittsburgh, Pa.

Cox Brass Mfg. Co., Albany, N. Y. (See page 261.)

Detroit Auto Visor Co., 302-06 Woodbridge St., E., Detroit, Mich.

Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.

Empire Gear & Top Co., 207 N. 22d St., Philadelphia, Pa.

English & Mersick Co., New Haven, Conn. (See pages 623 and 783.)

Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 174 and 175.)

Hartford Windshield Mfg. Co., 1006 S. Los Angeles St., Los Angeles, Cal.

Johnston Commercial Body Co., Fort Smith, Ark.

Jonah & George, Little's Ct., Merrimac, Mass.

Monarch Auto Accessory Mfg. Co., 78 Main St., Buffalo, N. Y.

Moore Co., W. J., Montague Ave. & Joy St., Caro, Mich.

Motor Products Corporation, 11803 Mack Ave., Detroit, Mich. (See page 857.)

Murray & Co., P. A., Newton, Mass.

Paco Mfg. Co., Franklin & Seventh Sts., Peoria, Ill.

Progressive Windshield Co., 1618-22 Wabash Ave., Chicago, Ill.

Rostand Mfg. Co., Milford, Conn.

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich. "Ackerman."

Sterling Top & Equipment Co., 518-22 W. 57th St., New York, N. Y.

Ternstedt Mfg. Co., Artillery and Muster Aves., Detroit, Mich. (See page 799.)

Troy Carriage Sun Shade Co., 710 Lincoln Ave., Troy, O.

Zenite Metal Co., 201-05 N. West St., Indianapolis, Ind. (See page 637.)

SHIELDS, Wind, for Fords

Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.

Motor Products Corporation, 11803 Mack Ave., Detroit, Mich. (See page 857.)

Paco Mfg. Co., Franklin & Seventh Sts., Peoria, Ill.

Progressive Windshield Co., 1618-22 Wabash Ave., Chicago, Ill.

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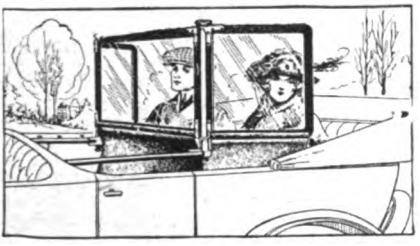

The only shield used as equipment

Thousands in use

Patented, February 27, 1912, and September 4, 1917. Other patents pending. Our patent upheld by the U. S. Court of Appeals. Beware of infringing imitations.

We have distributors in most large cities who carry stock and can take care of your wants immediately. Our prices are moderate.

Tonneau Shield Co., Inc.

Manufacturers

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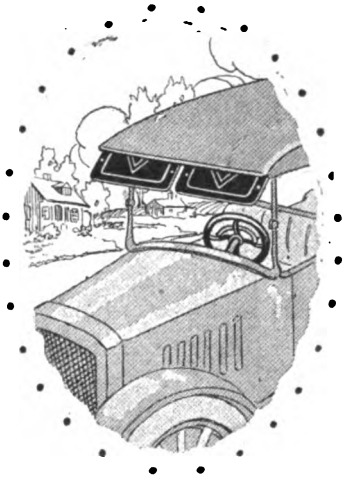
CODE TWIN VISOR

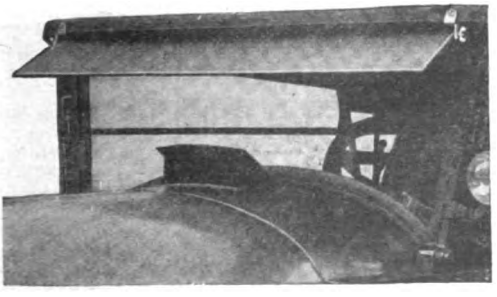


Code Twin Visors are made of pressed steel, black enamel finish with nickel trimming.

One size—universal for all open or closed cars.

Price, per pair.....$5.00
Single 3.50

Code Mfg. Co., Ltd., Chicago, U. S. A.



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Protects the Driver's Vision from Rain, Snow, Sun, Glaring Headlights Prevents Accidents

Made in black, green and white, and green and tan, size 40 inches wide. Rigid steel frame braced in center. Will not rattle, sag, buckle or vibrate. Cover can be taken off instantly to be cleaned. Extra covers in any of above colors. Each $3.00.

Adjustments to any angle without getting out of the car. Patented universal bracket fits any car.

LIST PRICE

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Dealers and Jobbers Write or Wire for Territory and Discounts

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SHIFTERS, Automatic Gear

C-H—See Cutler Hammer Mfg. Co.

Cutler Hammer Mfg. Co., 890 St. Paul Ave., Milwaukee, Wis. "C-H."

Laursen—See United States Auto Gear Shift Co.

Nuway Mfg. Co., Otis Bldg., Chicago, Ill.

United States Auto Gear Shift Co., Truax Bldg., Eau Claire, Wis. "Laursen."

Wilson Automatic Gear Shift Co., 343 S. Dearborn St., Chicago, Ill.

SHIMS AND LINERS, Brass and Copper

Brewer, Tichener Corp., Cortland, N. Y. (See page 567.)

Detroit Leather Works, 863 E. Lafayette Blvd., Detroit, Mich. (See page 125.)

Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for McCord Shims.) (See page 125.)

Fitzgerald Mfg. Co., Torrington, Conn. (See page 451.)

Gasket Supply Co., 1728 Ludlow St., Philadelphia, Pa. (See page 447.)

Kales Stamping Co., 1663 W. Lafayette Blvd., Detroit, Mich. (See page 641.)

Kickhaefer Mfg. Co., Dept. A., 189-201 Oregon St., Milwaukee, Wis. (See page 901.)

Laminated Shim Co., 47 W. 34th St., New York, N. Y. "Laminum." (See page 1129.)

Laminum—See Laminated Shim Co.

McCord Mfg. Co., Detroit, Mich. (See pages 784 and 785.)

Peelsteel Shim Co., Paterson, N. J.

Worcester Stamped Metal Co., Worcester, Mass. (See page 1019.)

SHIMS, DEMOUNTABLE RIM—See Plates, Demountable Rim Wedge

SHIMS, Rear Axle Taper for Fords

C. & M.—See Sells & Co.

Cantrell-Miller Machine Works—See Sells & Co.

Sells & Co., O. P., 1834 Broadway, New York, N. Y. (Sole Distributors for Cantrell-Miller Machine Works, San Francisco, Cal.) "C. & M."

SHIPPING BAGS—See Bags, Shipping

SHIPPING BLOCKS—See Chocks, Blocks and Clamps, Car Shipping

SHIPPING CHOCKS—See Chocks, Blocks and Clamps, Car Shipping

SHIPPING CLAMPS—See Chocks, Blocks and Clamps, Car Shipping

SHIPPING COVERS—See Covers, Paper and Canvas Shipping

SHOCK ABSORBERS

(See Springs, Supplementary; also Straps, Rebound)

Badger Mfg. Corp., Milwaukee, Wis. (See page 173.)

Balcrank—See Cincinnati Ball Crank Co.

Blackledge Mfg. Co., 341 E. Ohio St., Chicago, Ill. "Velvet."

Bull Dog—See Channon-Hughson Co.

Channon-Hughson Co., 227-33 W. Erie St., Chicago, Ill. "Bull Dog." (See page 507.)

Cincinnati Ball Crank Co., 90 North St., Cincinnati, O. "Balcrank." (See page 333.)

Cox Brass Mfg. Co., Albany, N. Y. "E-Zer." (See page 261.)

Diamond Jay Dee Co., 1400 Michigan Ave., Chicago, Ill. (See page 569.)

E-Zer—See Cox Brass Mfg. Co.

Flentje, Ernst, 1643 Cambridge St., Cambridge, Mass.

Gabriel Mfg. Co., 1421 E. 40th St., Cleveland, Ohio.

Gilman-Davis Mfg. Co., 224 S. Michigan Ave., Chicago, Ill. (See page 861.)

H L—See Hinsman Machine & Tool Co.

Hartford, Edward V., 35 Warren St., New York, N. Y. (See page 859.)

Hinsman Machine & Tool Co., Westfield, Mass. "H L."

Houdaille Co., 1335 Root Bldg., Buffalo, N. Y. (See page 1131.)

J. H. S.—See Sager Co.

Kane Pneumatic Shock Absorber Co., Centralia, Wash.

Landis Engineering & Mfg. Co., 231 Ringgold St., Waynesboro, Pa.

Lovejoy—See Packard Engineering Co.

Martin Shock Absorber Corp., 1301-1401 E. Slauson Ave., Los Angeles, Cal.

Marvel Shock Absorber Corp., 6520 Carnegie Ave., Cleveland, O. (See page 465.)

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

Morey—See Universal Mfg. Co.

Packard Engineering Co., 1824 Euclid Ave., Cleveland, O. "Lovejoy." (See page 1201.)

Parker—See Universal Distributing Co.

Parker Shock Absorber Co., 221 S. Hoyne Ave., Chicago, Ill.

Retrac Co., 67 Sixth St., Long Island City, N. Y.

Sager Co., J. H., 36-38 S. Water St., Rochester, N. Y. "J. H. S."

Starkweather-Snook Corp., 246 First St., Moline, Ill. "S. & S."

S. & S.—See Starkweather-Snook Corp.

Universal Distributing Co., Dime Bank Bldg., Detroit, Mich. "Parker."

Universal Mfg. Co., 2633 Randolph St., Lincoln, Neb. "Morey."

Usona Supply, 1549 Michigan Ave., Chicago, Ill.

Velvet—See Blackledge Mfg. Co.

Westinghouse Air Spring Co., Smedley Bldg., New Haven, Conn.

SHOCK ABSORBERS for Fords

(See also Springs, Supplementary; also Straps, Rebound)

Bethlehem Spark Plug Co., Bethlehem, Pa. (See page 713.)

C. S.—See Canton Specialty Co.

Canton Specialty Co., Canton, Ill. "C. S."

Cox Brass Mfg. Co., Albany, N. Y. (See page 261.)

Gabriel Mfg. Co., 1421 E. 40th St., Cleveland, Ohio.

Gilman-Davis Mfg. Co., 224 S. Michigan Ave., Chicago, Ill. (See page 861.)

Hartford, Edward V., 35 Warren St., New York, N. Y. (See page 859.)

Lang Engineering Co., J. S., 6 Park Sq., Boston, Mass. "National."

Luxry—See Specialty Device Co.

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

National—See Lang Engineering Co.

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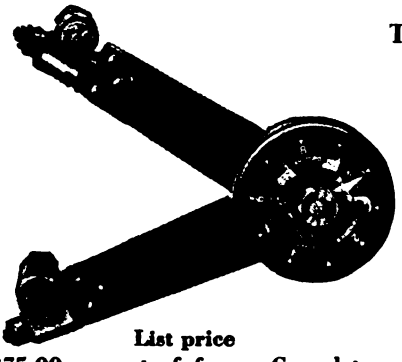
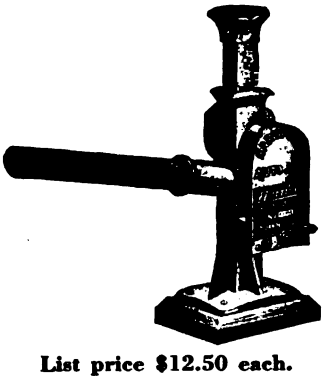
Hartford Equipment



List price
$75.00 per set of four. Complete with attaching fittings.

THE HARTFORD SHOCK ABSORBER regulates both the action and reaction of springs. It protects passengers and car mechanism under every changing condition of road, load and speed. It keeps the wheels on the road, saving tires and preventing danger from spring breakage. Makes any car a better, easier riding car. Hartfords are the leading high class shock absorbers on the market. Over half a million sets are now in use and the number grows every day. The new oilless type requires no lubrication, no attention at all.



List price $12.50 each.

THE HARTFORD AUTO JACK—"the best Jack money can buy". Makes child's play of lifting the heaviest car. 15 pounds pressure on the handle is transformed into a lift of 1000 pounds at the head. It is swifter and safer—stronger and more convenient to work. The extra long handle and short stroke make the Hartford particularly easy and safe to use. Finished in lustrous black enamel. In construction, appearance and performance—the finest Jack that can be built.

Prices

No. 500	Black Enamel	$14.50
No. 502	Black and Nickel	15.50
No. 501	Nickel	16.50

THE HARTFORD SPRING BUMPER—from end to end, a powerful, yet resilient spring. It parries the *blow* of collision—and absorbs the *shock*. Handsome, smart and efficient, it is a real asset to any car. The Hartford Spring Bumper is made of finest tempered spring steel. Practically unbreakable. Each end is a true loop-spring—the most efficient form of shock absorbing spring. Three-way attachments are practical for a great majority of cars. Approved by Underwriter's Laboratories.

EDWARD V. HARTFORD, Inc., 35 Warren Street, New York City

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SHOCK ABSORBERS for Fords (Continued)

P. V. Auto Co., Arctic, R. I. "Pvaco."
Pvaco—See P. V. Auto Co.
Plunkett Shock Absorber Co., 323-27 Washington St., Brooklyn, N. Y.
S. & S.—See Starkweather-Snook Corp.
Specialty Device Co., 106 W. Third St., Cincinnati, O. "Luxry."
Starkweather-Snook Corp., 246 First St., Moline, Ill. "S. & S."

SHOCK ABSORBERS, Airplane

Goodyear Tire & Rubber Co., Akron, O. (See page 1015.)

SHOES, Brake, for Fords

(Including both lined or faced and unlined shoes)

Adamson Mfg. Co., East Palestine, O.
Am-Pe-Co Sales Co., Marshalltown, Ia.
Bemiller Foundry & Machine Co.—See Eckhouse & Co.
Brocksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.
Buckeye—See Central Brass & Fixture Co.
Bull Dog—See Republic Auto Parts Co.
Canton Co., A. S., 174 Franklin St., New York, N. Y.
Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."
Clamert Mfg. Co., Third & Ross Sts., Pittsburg, Pa.
Clipper Tool Co., 234 Mills St., Buffalo, N. Y.
Dunham Co., Thos., Aurora, Ill. (See page 167.)
Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Factory Distributors for Bemiller Foundry & Machine Co., Belleville, O. (See page opposite Title Page.)
Emco Mfg. Co., 4 Griswold St., Binghamton, N. Y. (See page 497.)
Ever Safe—See Never Break Products Co.
Franklin Machine Co., Main St. Station, Franklin, N. H.
Gilco—See Keystone Products Co.
Goodrich-Lenhart Mfg. Co., Hamburg, Pa. (See page 721.)
Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass. (See page 417.)
Howell Co., W. H., Geneva, Ill. (See page 749.)
Illinois Brass Mfg. Co., 224-30 W. Ontario St., Chicago, Ill.
Keystone Products Co., St. Louis, Mo. "Gilco."
Manifold Heater Co., 30 Main St., Cortland, N. Y.
Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.
Monroe Auto Equipment Mfg. Co., First St., Monroe, Mich.
Motor Parts Machine Co., 645-49 S. Pierce St., Milwaukee, Wis.
Never Break Products Co., Bangor, Pa. "Ever Safe." (See page 879.)
Perfection—See Worthington, A. P.
Raybestos Co., Bridgeport, Conn. (See page 573.)
Republic Auto Parts Co., 31-35 Tenth St., Long Island City, N. Y. "Bull Dog."
Safety First Brake-Shoe Co., 313 S. Clinton St., Chicago, Ill.
Spencer's Sons, I. S., Fair St., Guilford, Conn.
Starr Bros. Bell Co., East Hampton, Conn.
U. S. Metal Goods Co., 5211 Euclid Ave., Cleveland, O. (See page 685.)
Vetex—See Victor Steel Stamping Co.
Victor Steel Stamping Co., 3102 Downing St., Denver, Colo. "Vetex."
W-M Co., York, Pa.
Whitehouse Mfg. Co., 42 Elm St., Newark, N. J. (See page 637.)
Wilson, K. R., 10-16 Lock St., Buffalo, N. Y. (See page 611.)
Worthington, A. P., 700 N. Main St., Los Angeles, Cal. "Perfection."

SHOES, Inner Tire

(Shoes or Sleeves to be used between outer shoe and inner tube as a protector and reinforcement. For Outer Shoes—See Sleeves, Tire Repair)

Acme—See Chicago Tire Goods Co.
Acme—See Eno Rubber Co.
Ajar—See Chicago Tire Goods Co.
Ajax Rubber Co., 220 W. 57th St., New York, N. Y. (See page 1009.)
Amazon Rubber Co., Akron, O. "O'Neil."
American—See Chicago Tire Goods Co.
American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "Tredkota."
American Rubber & Tire Co., 100 Beach St., Akron, O.
Arlington—See Voorhees Rubber Mfg. Co.
Atlas Rubber Co., 326 W. Grand Ave., Chicago, Ill.
Atwell Mfg. Co., 325 N. Main St., Independence, Mo.
Autocessory Sales Co., 542 W. Jackson Blvd., Chicago, Ill. "Insurt."
Bull Dog—See Pennsylvania Rubber Co.
Bull Dog—See Polson Rubber Co.
Bull Dog Tire Repair Co., 18 S. Fifth Ave., Chicago, Ill.
C-O-T—See Tingley & Co.
Champion—See Stephens Rubber Co.
Chicago Tire Goods Co., 1216 Webster Ave., Chicago, Ill. "Acme," "Ajax," "American."
Coffield Tire Protector Co., 117 Court St., Dayton, O.
Continental Rubber Works, 1902 Liberty St., Erie, Pa. "Vitalic."
Double Fabric Tire Co., 60 W. Ninth St., Auburn, Ind. "Interlock."
Dural Rubber Corp., Maple Ave., Flemington, N. J.
Eastern Tire & Rubber Co., 78 W. Second St. (South Boston), Boston, Mass.
Egyptian—See Polson Rubber Co.
Eno Rubber Co., 1026 S. Los Angeles St., Los Angeles, Cal. "Acme," "Peerless," "Samson," "Leech," "Jumbo."
Esner Mfg. Co., 206 Green St., Peoria, Ill. "No-Flo."
Essex Rubber Co., May & Beakes Sts., Trenton, N. J.
Ever Last Tread Co., 128 E. New York St., Indianapolis, Ind.
Excel Rubber Co., Wadsworth, O. "X. L."
Falls Rubber Co., Cuyahoga Falls, O.
Federal Rubber Co. (Cudahy), Milwaukee, Wis.
Firestone Tire & Rubber Co., Miller & Sweitzer Aves., Akron, O.
First National Tire & Reliner Co., 55 Compau Ave., N. W., Grand Rapids, Mich.
Fisher Mfg. Co., 735 O St., Lincoln, Neb.
Fisher Rubber Co., 1816 St. Clair Ave., Cleveland, O.
Gates Rubber Co., Broadway & Tennessee St., Denver, Colo. "Vulco."
General Tire & Rubber Co., E. Market St., Akron, O. "Red Coat."

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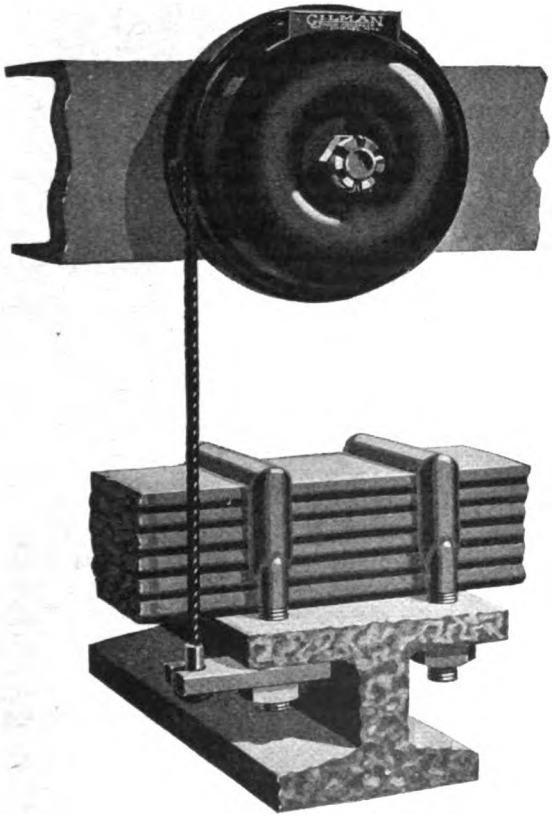
GILMAN SHOCK ABSORBER

Takes the Kick from the Recoil



The Gilman smoothly and positively controls the recoiling movement of an automobile spring the entire distance of its travel without harsh checking or snubbing at any stage.

It allows a car to ride upon its springs without restricting their downward movement. It completely eliminates the disagreeable upthrow which breaks the springs, jolts the car and jars the occupants.

It is the only shock absorber which can be adjusted with a screw driver while it remains upon the car.

It is handsome and compact in design. Its working parts are completely enclosed. Its attachment is simple. One type of fitting, applicable to fully 90 per cent of all makes of cars, makes it ideal for jobbers and dealers to stock.

PRICES:

Model C, set of 4 with fittings complete for cars weighing up to 3500 lbs., including Dodge, Buick, Nash, Chevrolet, Oakland, Oldsmobile, etc.... **$35.00**

Ford Model, set of 2, with fittings complete..... **18.50**

Model B, set of 4, for cars over 3500 lbs., with fittings complete, ready for delivery Spring of 1921..... **50.00**

GILMAN-DAVIS COMPANY

224 S. MICHIGAN AVENUE **CHICAGO**

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SHOES, Inner Tire (Continued)

Giant Tire & Rubber Co., Lima St. & Western Ave., Findlay, O.

Goodrich Co., B. F., S. Main St., Akron, O.

Goodyear Tire & Rubber Co., Akron, O. (See page 1015.)

Hagstrom Bros. Mfg. Co., Lindsborg, Kans.

Harkness & Fowler, 119 W. Main St., Louisville, Ky.

Indiana Rubber & Insulated Wire Co., Jonesboro, Ind.

Inner Shoe Tire Co., Oakes & Ellsworth Sts., Grand Rapids, Mich. "Innershu," "Shurhold," "Klincher."

Innershu—See Inner Shoe Tire Co.

Insurt—See Autocessory Sales Co.

Interlock—See Double Fabric Tire Co.

Jon-Con—See Jones-Conover Products Co.

Jones-Conover Products Co., 2124 N. 15th St., Philadelphia, Pa. "Jon-Con."

Jumbo—See Eno Rubber Co.

K & W Rubber Co., 55-65 Channing St., Delaware, O. "Maxotire."

Keystone Rubber Mfg. Co., 135 E. 11th St., Erie, Pa.

Klincher—See Inner Shoe Tire Co.

Lafayette Tire Co., 511-13 N. Ninth St., Lafayette, Ind.

Lee Tire & Rubber Co., 245 W. 55th St., New York, N. Y.

Leech—See Eno Rubber Co.

Lion—See Loewenthal Co.

Loewenthal Co., 947 W. 20th St., Chicago, Ill. "Lion."

Mason-Ryckoff Corp., 542 W. Jackson Blvd., Chicago, Ill. "Peerless," "Sturdy."

Maxotire—See K & W Rubber Co.

Midland Rubber Products Co., 1213-17 W. 15th St., Chicago, Ill.

Mile-Multiplier—See Tire In-Sole Mfg. Co.

Miller, Chas. E., 1400 S. Meridian St., Anderson, Ind.

Miller Rubber Co., Akron, O. (See page 979.)

National—See Stephens Rubber Co.

Miracle—See Rawhide Products Co.

No-Flo—See Esner Mfg. Co.

O'Neil—See Amazon Rubber Co.

Peerless Mfg. Corp., 1522-24 St. Louis Ave., Kansas City, Mo.

Peerless—See Eno Rubber Co.

Peerless—See Mason-Ryckoff Corp.

Peerless—See Polson Rubber Co.

Pennsylvania Rubber Co., Jeannette, Pa. "Bull Dog."

Perfection—See Stephens Rubber Co.

Perry Auto Co., 209 Seventh St., Pittsburgh, Pa. "Security."

Perma-Loc Mfg. Co., Wilkes-Barre, Pa. (See page 695.)

Phillips & Co., L. F., 1444 S. Morgan St., Chicago, Ill.

Planet Rubber Co., 223 E. Ninth St., Los Angeles, Cal.

Polson Rubber Co., Doan Ave. & Nickel Plate R. R., Cleveland, O. "Bull Dog," "Egyptian," "Peerless."

Porcupine Sales Corp., Hutton Bldg., Spokane, Wash.

Quaker City Rubber Co., 629 Market St., Philadelphia, Pa.

Racine Rubber Co., Asylum Ave., Racine, Wis.

Rawhide Products Co., 1834 Broadway, New York, N. Y. "Miracle."

Rawhide Tire Co., 1140 Broadway, New York, N. Y.

Ray Tire & Rubber Co., 833 Rees St., Chicago, Ill.

R-E—See Roose Mfg. Co.

Red Coat—See General Tire & Rubber Co.

Red Line, Inc., Grand Rapids, Mich. (See page 1047.)

Re-Miler Rubber Co., Ashland, O.

Reliable—See Stephens Rubber Co.

Roose Mfg. Co., 327-33 W. Main St., Louisville, Ky. "R-E." (See pages 129, 151, 325 and 327.)

Samson—See Eno Rubber Co.

Security Blow-out Holder Mfg. Co., Leggett Bldg., Fairfield, Ia.

Security—See Perry Auto Co.

Shur-Hold—See Inner Shoe Tire Co.

Spencer—See Voorhees Rubber Mfg. Co.

Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo. "Reliable," "Champion," "National," "Perfection," "Wear-ever."

Sterling Tire Corp., Rutherford, N. J.

Stretchless Inside Tire Co., 618 Golden Gate Ave., San Francisco, Cal.

Sturdy—See Mason-Ryckoff Corp.

Sturges Tire & Rubber Co., 26th & Union Sts., Oakland, Cal.

Superior—See Stephens Rubber Co.

Thermoid Rubber Co., Trenton, N. J. (See page 543.)

Tingley & Co., Chas. O., Ross St. & St. Geo. Ave., Rahway, N. J. "C-O-T."

Tire-Insole Mfg. Co., Findlay, Ohio. "Mile Multiplier."

Tredkote—See American Automobile Accessories Co.

Twentieth Century Tire Protector Co., Midlothian, Tex.

United States Tire Co., 1790 Broadway, New York, N. Y.

Viking—See Voorhees Rubber Mfg. Co.

Vitalic—See Continental Rubber Works.

Voorhees Rubber Mfg. Co., 20-56 Bostwick Ave., Jersey City, N. J. "Arlington," "Spencer," "Viking."

Vulco—See Gates Rubber Co.

Waban Webbing Co., 207 Essex St., Boston, Mass.

Wear-ever—See Stephens Rubber Co.

X-L—See Excel Rubber Co.

SHOP BOXES—See Boxes, Sheet Metal

SHOP STOOLS—See Stools, Steel Shop

SHOP VULCANIZERS—See Vulcanizers, Shop.

SHOVELS, COLLAPSIBLE—See Spades, Collapsible

SHOWS—See Expositions and Shows

SHUTTERS, RADIATOR—See Covers or Shields, Metal Radiator

SIDE CARS, MOTORCYCLE—See Cars, Motorcycle Side

SIDE LAMP BRACKETS—See Brackets, Side and Tail Lamp

SIDE LAMPS—See Lamps

SIDEWALK PUMPS—See Tanks and Systems, Gasoline Storage

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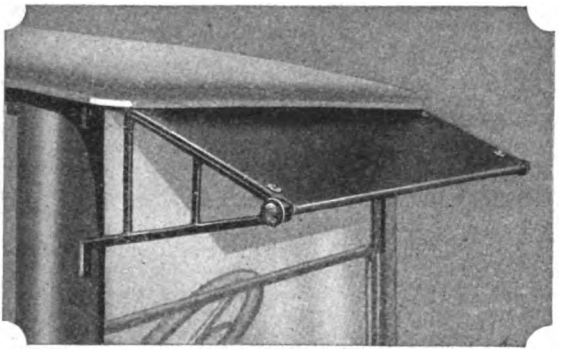
WARD Windshield VISOR



"The Visor that rolls up"

Keeps the SUN out of your eyes. Protects the windshield from DUST, RAIN, SNOW and annoying REFLECTIONS.

Buy the visor that IMPROVES THE LOOKS OF THE CAR, one that is made AS GOOD AS THE CAR.

A Partial List of Cars with the Type of Visor Used

Name of Car	Type	Name of Car	Type
Brewster	Special	Oakland	C
Cunningham	Special	Overland (4)	A
Daniels	Special	Packard	Special
Dodge	B	Peerless	D
Ford	C	Pierce	Special
Locomobile	Special	Stearns-Knight	D

Prices

Type A, B, and C	$ 8.50
Type D	9.50
Type Special	10.00

Give model, year and make of car when ordering. On special type give dimensions inside of front pillar posts.

Jobbers: WRITE FOR DISCOUNTS

E. T. WARD MFG. CO.

OAK PARK ILLINOIS

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SIGHT-FEEDS, Independent

(For installing on dash or instrument boards to show when oil is feeding or flowing properly—see also Gages)

American Brass & Iron Co., Detroit, Mich. (See page 205.)

Climax Motor Devices, Chagrin Falls, O. (See pages 303 and 565.)

Commonwealth Brass Corp., Detroit, Mich. (See page 1139.)

Hancock Mfg. Co., 802 E. Henry St., Charlotte, Mich.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O.

Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill

Michigan Lubricator Co., Detroit, Mich. (See page 259.)

Morris Co., George W., Racine, Wis.

Nagel Electric Co., W. G., Toledo, O. (See page 1141.)

National Gauge & Equipment Co., La Crosse, Wis. (See page 437.)

Pedersen Lubricator Co., 636 First Ave., New York, N. Y.

Powell Co., Wm., 2525 Spring Grove Ave., Cincinnati, O.

United States Gauge Co., 37 Liberty St., New York, N. Y. (See page 441.)

Wilkinson Co., Wm. H., Main St., West Medway, Mass.

SIGNALS, Direction Indicating or Traffic

(Devices for attaching to a car to enable the operator to indicate when a turn or stop is about to be made)

Acme Signal Co., 71 Columbia St., Seattle, Wash.

Akron-Newton F. & M. Co., Newton Falls, O. "Garl."

Arrow Mfg. Co., 618-22 Broadway, Toledo, O. "Fla. Ray."

Auto Equipment Co., 86 Pearl St., Hartford, Conn.

Auto Indicator Co., 210-18 Ottawa Ave., N. W., Grand Rapids, Mich. (See page 707.)

Auto Safety Signal Co., 22 Allen St., Rochester, N. Y. "Signa-Lite." (See page 1099.)

Auto Signal Mfg. Co., 1610 Jefferson St., Sullivan, Ill.

Automotive Accessory Co., Philadelphia, Pa. "Autophore."

Automotive Exchange of America, Hippodrome Annex, Cleveland, O. New York, Ohio and Southern Distributors for Auto Indicator Signals.) (See page 725.)

Autophore—See Automotive Accessory Co.

Bates—See Ryan Corp.

Bradley Co., H. E., Minneapolis, Minn.

Britton Auto Signal Co., 1137 Champlain St., Toledo, O.

Buff Mfg. Co., Wichita, Kans.

Bunyan Mfg. Co.—See Loewus, Edwin H.

Chase, 'Change, Inc., 1328 Broadway, New York, N. Y. "Gray."

Chicago Automatic Signal Co., 56 W. Randolph St., Chicago, Ill.

Chicago Die & Specialty Co., 553 W. Monroe St., Chicago, Ill. "Kobzy." (See page 1163.)

Comer—See Auto Signal Co.

Cowles & Co., C., New Haven, Conn. (See page 651.)

Day-Nite Auto Signal Co., 82 Eighth St., San Francisco, Cal. (See page 865.)

D. T. S.—See Denver Traffic Signal & Mfg. Co.

Denver Traffic Signal & Mfg. Co., 1020 Emerson St., Denver, Colo. "D. T. S."

Diamond Signal Co., 1207 Van Ness Ave., San Francisco, Cal.

Dolan—See Gartley-Weston Mfg. Co.

Fla-Ray—See Arrow Mfg. Co.

Fow Specialty Co., 145 N. Seventh St., Philadelphia, Pa.

Garl—See Akron-Newton F & M Co.

Gartley-Weston Mfg. Co., Real Estate Exchange Bldg., Detroit, Mich. "Dolan."

General Motor Devices Co., 5235 Ravenswood Ave., Chicago, Ill. "Trafik-Gide."

Georger, C. H., 639-41 Main St., Buffalo, N. Y.

Grand Rapids Brass Co., 90 Scribner Ave., N. W., Grand Rapids, Mich. "Thulen."

Gray—See Chase Change, Inc.

Hankee Electric Mfg. Co., 3330 University Ave., S. E., Minneapolis, Minn.

Hart's Auto Signal Tail Light Co., 7 N. First St., San Jose, Cal.

Hysig Co., 701 North Ave., Plainfield, N. J.

International Automatic Appliance Co., Mutual Life Bldg., Buffalo, N. Y.

Kloepfer-Springfield Autophore Co., 10 W. High St., Springfield, O.

Kobzy—See Chicago Die & Specialty Co.

Lexington Signal Co., Lexington, Ky.

Loewus, Edwin H., 304 W. 54th St., New York, N. Y. (Sole Distributors for Bunyan Mfg. Co., Cleveland, O. "Tell-U-When.") (See page 1185.)

Lunoe & Soule, 622 79th St., Brooklyn, N. Y. "Warno."

National Auto Signal Co., 1428 Bush St., San Francisco, Cal.

Nelson & Co., L. R., 1715 S. Washington St., Peoria, Ill.

Neverout—See Rose Mfg. Co.

Reliable Auto Safety Signal Co., 1308 Steiner St., San Francisco, Cal.

Rose Mfg. Co., 910 Arch St., Philadelphia, Pa. "Never-out." (See page 711.)

Rothermich, A. P., 2915 N. Taylor Ave., St. Louis, Mo.

Ryan Corp., Phoenix, N. Y. "Bates."

S-R-L—See Union Machine Co.

Safdicator—See Universal Safety Corp.

Signa-Lite—See Auto Safety Signal Co.

Signalite Mfg. Co., 522 S. Clinton St., Chicago, Ill.

Smith Signal Corp., 53-55 W. 66th St., New York, N. Y.

Tell-U-When—See Loewus, Edwin H.

Thulen—See Grand Rapids Brass Co.

Trafik-Gide—See General Motor Devices Co.

Turn-O-Stop—See Un-X-Ld Products Co.

Un-X-Ld Products Corp., 76 Front St., New York, N. Y. "Turn-O-Stop."

Union Machine Co., 183 University Ave., St. Paul, Minn. "S-R-L."

Universal Electric Automobile Signal, 6 Beacon St., Boston, Mass.

Universal Safety Corp., Decatur, Ill. "Safdicator." (See page 865.)

Universal Specialty Co., 1405-07 S. Seventh St., St. Louis, Mo.

Wagner Auto Signal Co., 1524 Franklin St., Oakland, Cal.

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Special Opportunities for Dealers and Distributors. Write!

OF COURSE IT IS

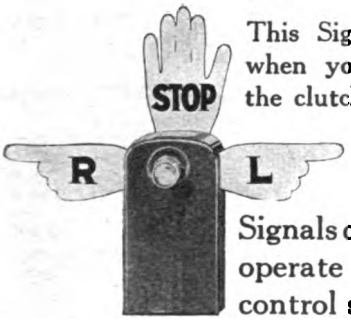
When you hear a fellow dealer say he has at last found *one* Signal that sells, satisfies, and *pays*, you know of course he means *Day-Nite* electro mechanical Signal—the *one* Signal fully efficient day and night *both*. Write us—we'll prove it.

DAY-NITE AUTO SIGNAL CO.
82 EIGHTH STREET, SAN FRANCISCO
MANUFACTURERS

Trade Mark
DAY-NITE SIGNAL
Registered

SAFDICATOR

THE UNIVERSAL SAFETY SIGNAL



This Signal operates when you push out the clutch.

Signals are automatically lighted at night when operating.

The two right and two left Signals on front and back of car operate together by a double control switch on dash.

This Signal goes on the right REAR fender.

PRICE
COMPLETE PAIR
$35.00

This Signal goes in FRONT and fastens to the filler cap of radiator.

Write for Territory Proposition and Catalog.

MFG. BY

UNIVERSAL SAFETY CORPORATION
DECATUR, ILLINOIS

THE WRIGHT SIGNAL

Retail price $8.50

De Luxe Model $15.00

installed on a car, insures the motorist's safety and security. It is absolutely mechanical. Dial shown at right fits over rear tail light, and is operated by a ratchet on the steering column. Can be installed on any car in from 45 to 60 minutes.

The WRIGHT Signal offers an exceptional opportunity for dealers. It is nationally advertised and provides a good margin of profit. Write Dept. D-2 for particulars.

THE WRIGHT TRAFFIC SIGNAL CO., CINCINNATI

FACTORY BRANCH: Wright Accessories Corp., Atlanta; Western Representatives: Dutsch & Co., Inc., San Francisco, Cal.

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SIGNALS, Direction Indicating or Traffic (Continued)

Warno—See Lunoe & Soule.
Watch-A-Stop Sales Co., 1618 Thompson St., Philadelphia, Pa.
Williams Mfg. Co., 125 W. 35th St., Los Angeles, Cal.
Worth Accessories Co., 6 Beacon St., Boston, Mass.
Wright Traffic Signal Co., Cincinnati, O. (See page 865.)

SIGNALS, WARNING—See Horns, Exhaust

SIGNS, Electric

American Sign Co., Kalamazoo, Mich. (See page 867.)

SIGNS, Enameled

Baltimore Enamel & Novelty Co., ft. Allen St., Baltimore, Md.
Enameled Steel Sign Co., 222 N. State St., Chicago, Ill.
General Etching & Mfg. Co., 312 S. Hamilton Ave., Chicago, Ill.
Ing-Rich—See Ingram-Richardson Mfg. Co.
Ingram-Richardson Mfg. Co., Beaver Falls, Pa. "Ing-Rich."
Murdock Co., James W., 116 Opera Pl., Cincinnati, O.
Shank Sign Co., E. A., 19 Park Row, New York, N. Y.

SIGNS, RADIATOR—See Monograms, Ornamental

SIGNS, Special Road

(Mirrors or reflectors of special design that glow red when the rays from the car headlights strike them—for use as danger signs or signals)

Automatic Signal & Sign Co., 905 Rex Ave., N. E., Canton, O. "Dependable."
Dependable—See Automatic Signal & Sign Co.

SILENCERS, EXHAUST—See Mufflers

SILENCERS, FENDER, FOR FORDS—See Braces, Mud Guard

SILENCERS, MUD GUARD, FOR FORDS—See Braces, Mud Guard

SILENCERS, Overhead Valve

Frey Sales Co., 418 Beard Ave., Buffalo, N. Y. "J. C. B."
J. C. B.—See Frey Sales Co.
K. H. K.—See Kay Co.
Kay Co., Kay H., 967 Woodward Ave., Detroit, Mich. "K. H. K." (See pages 83 and 869.)
Newton Mfg. Co., Church St., Plainville, Conn.
Soenksen-Spiers Engineering Co., Aurora, Ill. "Sosco." (See page 869.)
Sosco—Soenksen-Spiers Engineering Co.
Stewart Mfg. Co., Inc., Oakland, Cal. (See page 1119.)

SILENCERS, RADIUS ROD, FOR FORDS—See Anti-Rattlers, Radius Rod

SILENCERS, SPINDLE ARM, FOR FORDS—See Anti-Rattlers, Spindle Arm

SILENCERS, STEERING COLUMN, FOR FORDS—See Braces, Steering Column

SILENCERS, STEERING ROD, FOR FORDS—See Anti-Rattlers, Steering Rod

SILK, Spool

Sauquoit Silk Mfg. Co., Philadelphia, Pa.

SILK, Upholstery

Cheney Bros., South Manchester, Conn.
Midland Fabrics Co., 228 W. 58th St., New York, N. Y. (Distributors.) (See page 935.)
Monotuck Silk Co., Florence, Mass.
Seaco—See Seamans & Cobb Co.
Seamans & Cobb Co., Boston, Mass. "Seaco." (See page 775.)
Sauquoit Silk Mfg. Co., Philadelphia, Pa.
Schlegel Mfg. Co., 277 N. Goodman St., Rochester, N. Y.
Shirley Corp., 250 W. 54th St., New York, N.Y "Wearwell."
Strong Textile Co., 245 W. 55th St., New York, N. Y. (See page 251.)
Wearwell—See Shirley Corp.

SILLS, WOOD BODY—See Parts, Wood

SILVER, GERMAN—See Brass, Sheet

SINGLE SPARK IGNITION SYSTEMS—See Systems, Battery Ignition

SIREN HORNS—See Horns, Siren

SKID CHAIN APPLIERS—See Tools, Tire Chain Attaching

SKID CHAIN FASTENERS—See Fasteners, Tire Chain

SKIDS, Car Raising

(For facilitating repair work or cleaning—used as a substitute for a pit)

Montour Steel Co., Montour Falls, N. Y.
Portable Auto Trench Co., 2 Depot Yard, Lynn, Mass.

SKIVING MACHINES—See Machines, Tire Skiving

SLAT IRONS—See Irons, Slat

SLEEVE PROTECTORS—See Protectors, Sleeve

SLEEVE PULLERS FOR FORDS — See Pullers, Axle Bearing Sleeve

SLEEVES or BANDS, Tire Repair

(For lacing or strapping around a tire to close a puncture or blowout. For Sleeves to be used between inner tube and outer shoe—See Shoes, Inner Tire)

Acme—See Chicago Tire Goods Co.
Ajax Rubber Co., 220 W. 57th St., New York, N. Y. (See page 1009.)
Amazon Rubber Co., Akron, O. "O'Neil."
American Chain Co., Bridgeport, Conn. "Dobbins." (See page 535.)
Atco—See Autocrat Tire Co.

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Ford
Cadillac
DODGE
Studebaker
ELECTRIC SIGNS
Overland
REO
GARAGE
KELLY SPRINGFIELD TIRES
Oldsmobile
PAIGE
HAYNES
Buick
HUDSON SUPER SIX
Packard

Your customers have seen many electric signs. Did they see yours? If you have the right kind, the right size, and the right location on your building; yes. If you have a poor one, one too small, badly located on the building, part of the lamps burned out and not replaced, or if you have none at all, quite probably they did not.

Automobile merchandising and garage service needs, and will profit by, an unusual amount of electric advertising. People used to be at home reading the papers in the evening; now they are out driving about and will see your electric sign if you have one.

An "American" electric advertising sign will tell your prospective customer **WHO** you are, **WHERE** you are, and **WHAT** you have to sell all at one and the same time. This three fold impression is not produced by any other form of advertising.

The "American" is made to order (not a stock job) beautiful and attractive by day as well as brilliant, fascinating and convincing by night.

The "American" has no superior in design, construction, durability, and economy.

The "American" is furnished in any of the important types of electric signs; lens letters, outside lamp type letters, opal glass letters, or in art glass faces.

The latest creations in colored illumination with moving effects, possible only through a combination of colored lamps with the colored "American" lenses.

Our flexible oven-baked enamel finish is produced in any desired color or tint, with trimmings in harmonizing colors or gold leaf.

The "American" is built and finished as you want it and not like your competitor's sign—an advertising advantage decidedly beneficial to you.

Buy an **"AMERICAN"**. Write for illustrations, special hand sketch, or any other desired information.

AMERICAN SIGN COMPANY
Kalamazoo, Michigan U. S. A.

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SLEEVES or BANDS, Tire Repair (Continued)

Atlas Rubber Co., 326 W. Grand Ave., Chicago, Ill.
Auto Boot Mfg. Co., Hutton Bldg., Spokane, Wash. "Porcupine."
Auto Tire Boat Co., 1210 Webster Ave., Chicago, Ill.
Autocrat Tire Co., Main & F Sts., Midlothian, Tex. "Atco."
Badger Handle Co., 415-19 Third St., Milwaukee, Wis.
Brictson Mfg. Co., 14th & Farnum Sts., Omaha, Neb.
Broughton Co., George H., 256 Main St., Buffalo, N. Y.
Bull Dog—See Polson Rubber Co.
Chicago Raw Hide Mfg. Co., 1801 Elston Ave., Chicago, Ill. "Krome."
Chicago Tire Goods Co., 1216 Webster Ave., Chicago, Ill. "Acme."
Continental Rubber Works, 1902 Liberty St., Erie, Pa. "Vitalic."
Corker—See General Tire & Rubber Co.
Corona—See Voorhees Rubber Mfg. Co.
Dobbins—See American Chain Co.
Double Fabric Tire Co., 60 W. Ninth St., Auburn, Ind.
Durable—See Gates Rubber Co.
Eastern Tire & Rubber Co., 78 W. Second St. (So Boston), Boston, Mass.
Empire Tire & Rubber Co., Mulberry St. & Clinton Ave., Trenton, N. J.
Eno Rubber Co., 1026 S. Los Angeles St., Los Angeles, Cal.
Essex Rubber Co., May & Beakes Sts., Trenton, N. J.
Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for "G. K." Sleeves.) (See page 125.)
Falls Rubber Co., Cuyahoga Falls, O.
Federal Rubber Co. (Cudahy), Milwaukee, Wis.
Firestone Tire & Rubber Co., Miller & Sweitzer Aves., Akron, O.
First National Tire & Reliner Co., 55 Compau Ave., N. W., Grand Rapids, Mich.
Fisher Mfg. Co., 735 O St., Lincoln, Neb.
G. & K.—See Graton & Knight Mfg. Co.
Gates Rubber Co., Broadway & Tennessee Sts., Denver, Colo. "Durable."
General Tire & Rubber Co., E. Market St., Akron, O. "Corker."
Goodrich Co., B. F., S. Main St., Akron, O.
Goodyear Tire & Rubber Co., Akron, O. (See page 1015.)
Graton & Knight Mfg. Co., Worcester, Mass. "G. & K." (See page 119.)
Indiana Rubber & Insulated Wire Co., Jonesboro, Ind.
Inner Shoe Tire Co., Oakes & Ellsworth Sts., Grand Rapids, Mich.
K & W Rubber Co., 55-65 Channing St., Delaware, O.
Keystone Rubber Mfg. Co., 135 E. 11th St., Erie, Pa.
Kimball Tire Case Co., 163 Broadway, Council Bluffs, Ia.
Krome—See Chicago Rawhide Mfg. Co.
Lafayette Tire Co., 511-13 N. Ninth St., Lafayette, Ind.
Lee Tire & Rubber Co., 245 W. 55th St., New York, N. Y.
Legnard Co., A. B., Dept. 14, Waukegan, Ill. (See page 649.)
Michelin Tire Co., Milltown, N. J.
Miller, Chas. E., 1400 S. Meridian St., Anderson, Ind.
National—See Stephens Rubber Co.
National Leather Belt Co., 342 E. 38th St., New York, N. Y.
O'Neil—See Amazon Rubber Co.
Pennsylvania Rubber Co., Jeannette, Pa.
Polson Rubber Co., Doan Ave. & Nickel Plate R. R., Cleveland, O.
Porcupine—See Auto Boot Mfg. Co.
Racine Rubber Co., Asylum Ave., Racine, Wis.
Rugg & Co., B. L., Newark, O.
Sioux City Tire & Mfg. Co., Fifth & Plymouth Sts., Sioux City, Iowa.
Slapatch—See Wilson Rubber Co.
Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo. "National," "Superior."
Sturges Tire & Rubber Co., Oakland, Cal. (See page 647.)
Twentieth Century Tire Protector Co., Midlothian, Tex.
United States Tire Co., 1790 Broadway, New York, N. Y.
Vitalic—See Continental Rubber Works.
Voorhees Rubber Mfg. Co., 20-56 Bostwick Ave., Jersey City, N. J. "Corona."
Wearwell Rubber Co., Kokomo, Ind.
Wilson Rubber Co., Hubbell Bldg., Des Moines, Iowa. "Slapatch."
Woodworth Mfg. Co., 1-29 Starr Ave., Binghamton, N. Y.

SNAP HOOKS—See Hooks, Snap

SNAP LOOPS—See Loops, Brass Snap

SOAPS, Automobile

(See also Polishes, Automobile)

Amalie—See Sonnenborn Sons.
Amberzo—See Columbia Refining Co.
American Crown—See Kirk & Co.
American Soap & Washoline Co., 140-80 Central Ave., Cohoes, N. Y. "Apollo."
American Textile Soap Co., 56 Walker St., Springfield, Mass. "Fisk."
Apollo—See American Soap & Washoline Co.
Arco Co., Euclid Ave. & E. 65th St., Cleveland, O.
Armor Oil & Chemical Co., Reserve Bank Bldg., Kansas City, Mo. "Wonder Cleaner."
Armour Soap Works, 31st Pl. & Benson St., Chicago, Ill. "Lustro."
Arnold, N. B., 1 Sigourney St., Brooklyn, N. Y. "Silikup."
Arnstein, Eugene, 45 W. 26th St., Chicago, Ill. "Century."
Auto King—See National Soap Co.
Balkan—See Jones & Bro.
Baum's Castorine Co., 104 N. George St., Rome, N. Y.
Blue Ribbon—See International Metal Polish Co.
Boston Blacking Co., Third & Potter Sts., Cambridge, Mass. "Red Fox."
Buckeye—See Davis-Young Soap Co.
Camden Chemical Mfg. Co., 18th & Mickle Sts., Camden, N. J. "Greyhound."
Century—See Arnstein, Eugene.
Chariot—See Fiske Bros. Refining Co.
Chemical Supply Co., 2450 Canal Rd., Cleveland, O.
Claire Mfg. Co., 719 W. 63d St., Chicago, Ill. "Jinx."
Cleaneasy—See Winn, Wm. R.
Clenzo—See Puritan Oil & Paint Co.
Climax Lubricating Co., 218 N. 13th St., Philadelphia, Pa.

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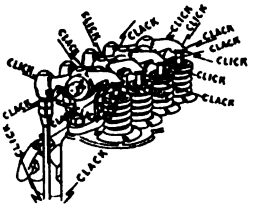
NOISE



"My car always used to sound like a threshing machine. Since I had the new Tappets put on, it is beautifully quiet."

Writes a 1916 Buick Owner

"Such a relief to get away from the noise of my valves. I can hardly believe it is the same car. It runs quieter and has more get away."

Writes an Oakland Owner

OIL CUSHION TAPPETS

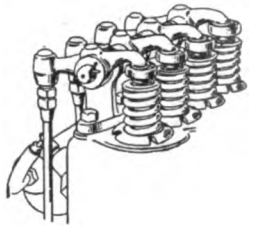
DEALERS: Every Buick, Oakland and other overhead valve car in your town, is a possible customer for a set of "Oil Cushion Tappets." For no one likes to drive a car with a noisy motor now-a-days.

Write us today and let us send you the complete story of "Oil Cushion Tappets"—and our liberal terms to the trade.

4 CYL. CARS $3.50 Per Set
6 CYL. CARS $5.00 Per Set

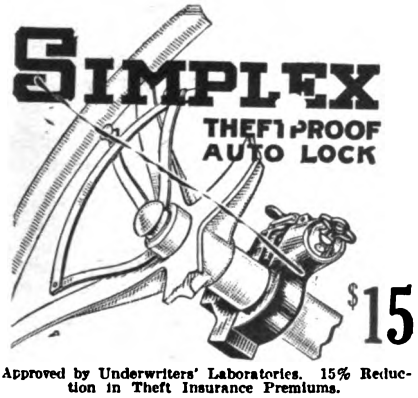
SOENKSEN-SPIERS ENG. CO.
AURORA ILLINOIS

SILENCE



The reason why oil cushion tappets make a motor silent is because, after the oil cushion tappets are installed on the motor the cap is filled with oil and when the motor is put in operation this oil is drawn in between the two springs on the upstroke of the valve so that as the rocker arm strikes the down blow it hits on a cushion of oil; deadening the noise of the valve tap.

SIMPLEX



Approved by Underwriters' Laboratories. 15% Reduction in Theft Insurance Premiums.

An Approved Lock for Every Car

Quickly installed on steering post without change in its construction. Unpickable Corbin lock—unbreakable housing. Locks front wheels in straight ahead position—car cannot be steered or towed, yet complies with local ordinances.

Also special locks for Ford, Overland, Maxwell and Chevrolet.

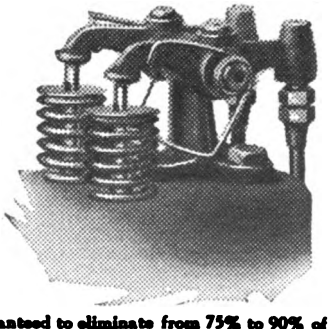
Simplex Locks are guaranteed. Sold by garages and auto dealers everywhere. Dealers: Order from your Jobbers or write us direct.

SIMPLEX CORPORATION
2214 S. Michigan Ave. Chicago, Ill.

STOP THAT NOISE

WITH

K H K
Valve in Head
MOTOR SILENCERS



Guaranteed to eliminate from 75% to 90% of that clacking noise caused by the action of rocker arms and push rods in valve-in-head motors (Buick, Chevrolet, Oakland, Oldsmobile, Scripps-Booth). Adds pep to motor operation. Eliminates constant adjustment of tappets. Exactly what car owners are looking for. Thousands of sets in use. Sold on a "satisfaction or money back" guarantee.

Ask your jobber or write direct

KAY H. KAY COMPANY
967 Woodward DETROIT

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SOAPS, Automobile (Continued)

Columbia Refining Co., 90 West St., New York, N. Y. "Amberso."

Damascus Mfg. Co., 9501 Cassius Ave., Cleveland, O.

Davies-Young Soap Co., Findlay St. & Big Four R. R., Dayton, O. "Buckeye."

Detroit White Lead Works, 1960 Milwaukee Ave., E., Detroit, Mich.

Duplex—See Enterprise Oil Co.

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."

E-Fec-Tiv—See Permatite Mfg. Co.

Eavenson & Sons, J., 3009 Market St., Philadelphia, Pa. "Truxo," "Jesco."

Enterprise Oil Co., 164 Chandler St., Buffalo, N. Y. "Duplex."

Esner Mfg. Co., 100 Glendale Ave., Peoria, Ill. "Soo-Off-E-Z."

Excelsior—See Mills Oil Co.

Fairchild & Bro., M. B., 6 W. Austin Ave., Chicago, Ill.

Famaco—See Mears Chemical Co.

Fisk—See American Textile Soap Co.

Fiske Bros. Refining Co., 24 State St., New York, N. Y. "Chariot."

Flash Chemical Co., 160-70 Second St., Cambridge, Mass.

Ford & Dennen—See Richmond & Co.

Frierich & Mansell, 74 Grand St., New York, N. Y.

G. W.—See Great Western Oil Co.

Globe Soap Co., Cincinnati, O.

Glossene—See Lautz Bros. & Co.

Good, James, 939-41 N. Front St., Philadelphia, Pa.

Great Western Oil Co., 2855 E. 37th St., Cleveland, O. "G. W."

Green Lion—See Puritan Soap Co.

Green Oil Soap Co., 166-72 N. Curtis St., Chicago, Ill. "Simplex."

Greyhound—See Camden Chemical Mfg. Co.

Hachmeister-Lind Chemical Co., 2332 Forbes St., Pittsburgh, Pa. "Halico."

Halico—See Hachmeister-Lind Chemical Co.

Hall-Thompson Co., Dept. A., Hartford, Conn. "Wonder Worker." (See page 227.)

Harral Soap Co., 132-36 Havemeyer St., Brooklyn, N. Y. "Kleeneasy."

Harris Oil Co., A. W., Providence, R. I. (See page 665.)

Heaney Mfg. Co., 10-12 India Sq., Boston, Mass. "Lion."

Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whizoil."

Houghton & Co., E. F., 240 W. Somerset St., Philadelphia, Pa.

Howard Lubricants Co., 1105 Bedford Ave., Brooklyn, N. Y. "Rome."

International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."

Interstate Chemical Co., 667 Garfield Ave., Jersey City, N. J.

Invincible—See Millers Sons Co.

Jesco—See Eavenson & Sons.

Jewel—See Wadsworth-Howland Co.

Jinx—See Claire Mfg. Co.

Jones & Bro., J., 429 Locust St., Philadelphia, Pa. "Balkan."

K. K. K.—See Killen Kemical Ko.

Kenney Mfg. Corp., F., 860 Dorchester Ave., Boston, Mass.

Killen Kemical Ko., Lansing, Mich. "K. K. K." (See page 263.)

Kirk & Co., James S., 1232 W. North Ave., Chicago, Ill. "American Crown."

Kleeneasy—See Harral Soap Co.

Kleno Mfg. Co., North Weymouth, Mass.

Klenz—See Symonds Co.

Layton Park Oil & Soap Co., M. & M. Bank Bldg., Milwaukee, Wis.

Lautz Bros. & Co., 44 Hanover St., Buffalo, N. Y. "Glossene."

Liberty Bell Oil Co., 600 S. Vandeventer Ave., St. Louis, Mo.

Liberty Chemical Works, 352 E. Illinois St., Chicago, Ill.

Lin-O—See Struns & Son.

Lin-Oil-Jel—See National Soap Co.

Lins Mfg. Co., W. R. (Roxborough), Philadelphia, Pa. "Linsco."

Linsco—See Lins Mfg. Co.

Lion—See Heaney Mfg. Co.

Long Island Soap Co., Meeker Ave. & Bridgewater St., Brooklyn, N. Y. "Rex." (See page 871.)

Loos & Dilworth, 134 S. Front St., Philadelphia, Pa.

Lustro—See Armour Soap Works.

McDougall-Butler Co., 6 Evans St., Buffalo, N. Y.

Magic—See Zurn Co.

Martin-Senour Co., 2510 Quarry St., Chicago, Ill.

Mears Chemical Co., Frank A., 63 Biltmore Ave., Asheville, N. C. "Famco."

Middle States Oil Co., Engineers Bldg., Cleveland, O.

Mills Oil Co., C. E., So. West St., Syracuse, N. Y. "Excelsior."

Mobo—See Stanley Co.

Monogram—See New York Lubricating Oil Co.

Moore Oil Refining Co., York St. & McLean Ave., Cincinnati, O.

Munger Products Co., 220 Fifth Ave., New York, N. Y. "Wundrmo."

Murphys—See Phoenix Oil Co.

Napco—See National Oil Products Co.

National Oil Products Co., 15 Bergen St., Harrison, N. J. "Napco."

National Rubber & Specialties Co., 4433-39 Chickering Ave., Cincinnati, O. "Pioneer."

National Oil & Supply Co., 130 Frelinghuysen Ave., Newark, N. J. "Viscos."

National Soap Co., 1910 Franklin St., Detroit, Mich. "Auto King," "Lin-Oil-Jel."

New York Lubricating Oil Co., 116 Broad St., New York, N. Y. "Monogram."

O'Neil Oil & Paint Co., 297-303 E. Water St., Milwaukee, Wis. "Velvet."

Oil City Oil & Grease Co., Seneca St., Oil City, Pa.

Panhard Oil Corp., 395 Broadway, New York, N. Y.

Parker Refining Co., 1307 W. 11th St., Cleveland, O.

Parker Rishor Mfg. Co., 841 Maple St., Rochester, N. Y. "Parko."

Parko—See Parker Rishor Mfg. Co.

Peerless Mineral Products Co., 15 Whitehall St., New York, N. Y.

Perfection—See Warren Refining & Chemical Co.

Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."

Phoenix Oil Co., 2554 W. Fifth St., Cleveland, O. "Murphys."

Pioneer—See National Rubber & Specialties Co.

Powero—See Tide Water Oil Co.

Puritan Oil & Paint Co., 1218 W. 70th St., Cleveland, O. "Clenso."

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MOBO AUTO SOAP

The 100% Pure Vegetable-Oil Soap

PUT in a stock of MOBO AUTO SOAP and SHOFO HAND CLEANSER. We will send you a Window Display, lithographed in eight colors, Store Signs, Leaflets and Window Streamers to help move the goods off your shelves.

JOHN T. STANLEY CO., Inc.

30th Street and North River - - NEW YORK

Automatic Extension Reels

For Electric Lamps

Pat. Jan. 30, 1917

Especially adapted for use in Manufacturing Plants, Garages, Machine Shops, etc., and a great convenience for adjustable extensions for portable electric drills, grinders, fans, etc. Equipped with 25 ft. reinforced cord, lamp socket and guard. Attached to ceiling, beam or conduit. A swivel joining enables lamp to be carried in any direction from Reel, returning it automatically when not in use. An automatic lock holds the lamp at any desired distance from the reel.

Perfect insulation—stands test of an A. C. Potential of 1250 volts—only 250 volts required for lamp service. Safe—satisfactory—convenient—necessary.

Approved by Underwriters. Local Fire and Electrical Boards endorse it.

Write for particulars and prices

THE CINCINNATI SPECIALTY MFG. CO., INC.

Sole Manufacturers

1911 Powers St., W. Cincinnati, Ohio

The "Liberty Bell" Auto Signal

To the ear, the "LIBERTY BELL" conveys a warning and a polite request; to the eye, it shows the universally accepted danger signal — a red light, which flashes when bell rings.

The "LIBERTY BELL" comes in three standard models and three sizes.

Brackets and fittings come for attaching the "LIBERTY BELL" either to the cowl or running board, to the radiator or on the windshield. They sell from $9 to $14, according to model and size.

Here is not only a very useful warning signal but a very handsome ornament for any car. These Signals are growing in greater demand every day. Send for discount to the trade.

THE BUNYAN MFG. CO.

Cleveland, Ohio

REX AUTO SOAP

MADE ONLY OF PUREST VEGETABLE OILS

REX AUTO SOAP surpasses similar products in its quick-working qualities and in its purity. It will not affect the most delicate finish of the car.

The Soap itself, and our lithographed displays furnished to dealers make REX the easiest and most profitable seller in the soap field.

LONG ISLAND SOAP COMPANY

Meeker Ave. and Bridgewater St. Brooklyn, N. Y.

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SOAPS, Automobile (Continued)

Puritan Soap Co., 500 Exchange St., Rochester, N. Y.

Red "C" Oil Mfg. Co., Keyser Bldg., Baltimore, Md. "Speedway."

Red Fox—See Boston Blacking Co.

Rex—See Long Island Soap Co.

Rexine Co., Pennsylvania & River Sts., Sheboygan, Wis.

Richmond & Co., C. C., 40 Batterymarch St., Boston, Mass. "Ford & Dennen."

Rie-Nie—See Durkee-Atwood Co.

Robertson Products Co., Theo. B., 700-04 W. Division St., Chicago, Ill. "T. B. R."

Rome—See Howard Lubricants Co.

Sanozone Chemical Co., 5 N. 20th St., Philadelphia, Pa.

Simplex—See Green Oil Soap Co.

Skat Co., 791 Park St., Hartford, Conn.

Slikup—See Arnold, N. B.

Snow Flake Axle Grease Co., 123 Oliver St., Fitchburg, Mass.

Sonneborn Sons, L., 262 Pearl St., New York, N. Y. "Amalie."

Soo-Off-E-Z—See Esner Mfg. Co.

Speare's Sons Co., Alden, 140 Sixth St., Boston, Mass.

Speedway—See Red "C" Oil Mfg. Co.

Stanley Co., John T., 30th St. & North River, New York, N. Y. "Mobo."
(See page 871.)

Struns & Son, S., 708 Bingham St., Pittsburgh, Pa. "Lin-O."

Sullivan Oil Co., 413 N. Wells St., Chicago, Ill.

Superior—See Durkee-Atwood Co.

Symonds Co., Joseph H., Westfield, Mass. "Klenz."

T. B. R.—See Robertson Products Co.

Tide Water Oil Sales Corp., 11 Broadway, New York, N. Y. "Powero."
(see page 667.)

Truxo—See Ravenson & Sons, J.

Velvet—See O'Neil Oil & Paint Co.

Visco Motor Oil Co., 2104 Superior Ave., N. W., Cleveland, O.

Viscos—See National Oil & Supply Co

Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."

Walter & Co., W. A., 428 W. Conway St., Baltimore, Md.

Warren Refining & Chemical Co., Cleveland, O. "Perfection."

Washzum—See White & Bagley Co.

White & Bagley Co., Worcester, Mass. "Washzum." (See page 663.)

Whizoil—See Hollingshead Co.

Winn, Wm. R., 143 Maiden Lane, New York, N. Y. "Cleaneasy."

Wonder Cleaner—See Armor Oil & Chemical Co.

Wonder Worker—See Hall-Thompson Co.

Wundrmo—See Munger Products Co.

Zurn Co., O. F., 2736-38 N. Broad St., Philadelphia, Pa. "Magic."

SOAPS and PASTES, Hand

A-1 Mfg. Co., Front & Wharton Sts., Philadelphia, Pa.

Adacol Laboratories, Providence, R. I.

American Soap and Washoline Co., 140-80 Central Ave., Cohoes, N. Y. "Graham," "S. & H."

Armour Soap Works, 1355 W. 31st Pl., Chicago, Ill. "M & M," "Pumex."

Arnold, N. B., 1 Sigourney St., Brooklyn, N. Y. "Silkup."

Atwell Mfg. Co., 325 N. Main St., Independence, Mo.

Auto-Remedy Co., Evans St., Cincinnati, O. "Magic."

Baum's Castorine Co., 104 N. George St., Rome, N. Y.

Bear Cat Products Co., Capitol Hill Sta., Oklahoma City, Okla.

Blue Ribbon—See International Metal Polish Co.

Boston Blacking Co., Third & Potter Sts., Cambridge, Mass. "O-So-Easy," "Sapo[illegible]"

Bristol Mfg. Co., 106 Friend St., B[illegible]n, Mass. "Jumbo."

Champion—See Gardner & Co.

Chauffeur—See Decatur Union Chemical Co.

Claire Mfg. Co., 719 W. 63d St., Chicago, Ill. "Jinx."

Cleaneasy—See Winn, Wm. R.

Cleanup—See Flash Chemical Co.

Cleanzum—See White & Bagley Co.

Colgate & Co., 199 Fulton St., New York, N. Y.

Corliss Supply & Mfg. Co., 1906 Olive St., St. Louis, Mo.

Cudahy Packing Co., 111 W. Monroe St., Chicago, Ill. "Goblin."

Davies-Young Soap Co., Findlay St. & Big Four R.R., Dayton, O. "Whiz."

Decatur Union Chemical Co., 636 E. Wood St., Decatur, Ill. "Chauffeur."

Drury Chemical Products Co., 71 W. Eagle St., Buffalo, N. Y. "Kemico Wonder."

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."

E-Fec-Tiv.—See Permatite Mfg. Co.

E-Ze Products Co., 8 E. 14th St., New York, N. Y.

Ericka Mfg. Co., 882 Liberty St., Springfield, Mass. "Itsafine."

Esner Mfg. Co., 206 Green St., Peoria, Ill. "Soo-Off-E-Z."

Ferret—See Symonds Co.

Fiebing Chemical Co., 238-40 Reed St., Milwaukee, Wis. "Presto."

Flash Chemical Co., 160-70 Second St., Cambridge, Mass. "Cleanup."

Frisko Mfg. Co., Kansas City, Mo.

Gardner & Co., 222 E. 34th St., New York, N. Y. "Champion."

Garnet Co., Geo. H., 913 Greenleaf St., Allentown, Pa. "Meckano."

Gastine Co, Bridgeton, N. J.

Git Mfg. Co., 92 Franklin St., Westfield, Mass.

Goblin—See Cudahy Packing Co.

Graham—See American Soap & Washoline Co.

Gre-Solvent—See Utility Co.

Green Oil Soap Co., 166-72 N. Curtis St., Chicago, Ill.

Grim-Off—See Pitts Sanitary Co.

Grime-Off—See Pacific Coast Borax Co.

Hall-Thompson Co., Dept. A., Hartford, Conn. "Wonder Worker."
(See page 227.)

Hand-I-Wash—See Tay-Miller Mfg. Co.

Harbor Sales & Mfg. Co., 51 E. 42d St., New York, N. Y. "Slick-Shine."

Heaney Mfg. Co., 10-12 India Sq., Boston, Mass. "Revivo."

Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Krystal Soiloff."

I. C. U.—See Livingston Co.

Imp—See Rath Mfg. Co.

International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."

Itsafine—See Ericka Mfg. Co.

Jewel—See Wadsworth-Howland Co.

Jinx—See Claire Mfg. Co.

Jumbo—See Bristol Mfg. Co.

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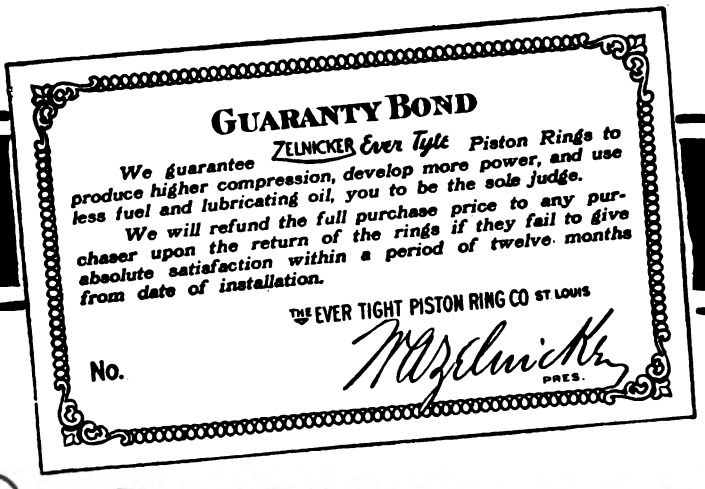

GUARANTY BOND

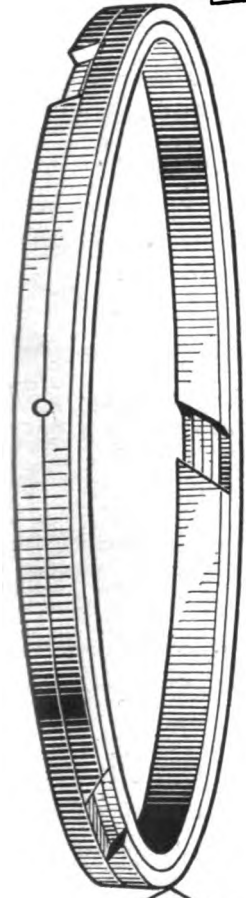
We guarantee ZELNICKER Ever Tyte Piston Rings to produce higher compression, develop more power, and use less fuel and lubricating oil, you to be the sole judge.

We will refund the full purchase price to any purchaser upon the return of the rings if they fail to give absolute satisfaction within a period of twelve months from date of installation.

THE EVER TIGHT PISTON RING CO ST LOUIS

No.

M. Zelnicker PRES.



Read This Guaranty Bond

It is the most sweeping guarantee ever made by any manufacturer of piston rings. No stronger guarantee could be made. It gives both car owner and dealer absolute certainty of satisfaction.

Why We Can Afford to Make This Guarantee

It is because we *know* what ZELNICKER *Ever-Tyte* Piston Rings will do, that we dare to offer so positive a guarantee. We know that the "3 piston rings in one" interlocking construction reduces to a minimum the escape of gas or oil past the rings. We know that the ZELNICKER 6-point expansion keeps the *Ever-Tyte* always a perfect circle, however it is expanded or contracted. We know that ZELNICKER *Ever-Tytes* insure maximum compression.

But the case rests not on what we say, but on what users say—voluntarily. Here are extracts from just two of the hundreds of letters we have on file:

"We have been using Ever-Tytes for two years and our customers are more than satisfied. These rings do all you claim, and then some."—Leonard Johnson & Co., 2416 Cottage Grove Ave., Chicago.

"Our opinion at present is that it is the only perfect ring made."—Hall Gas Engine Co., Inc., Bridesburg, Philadelphia, Pa.

Why not have the advantages which *Ever-Tyte* certainty of satisfaction gives you? *Ever-Tytes* will bring you in more profits and build business for you. Write for the *Ever-Tyte* proposition.

THE EVER TIGHT PISTON RING CO.

Established 1912 Saint Louis, Mo.

ZELNICKER
Ever-Tyte
The Piston Ring
for All Engines

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SOAPS and PASTES, Hand (Continued)

K-K-K—See Killen Kemical Ko.
Kemico Wonder—See Drury Chemical Products Co.
Kemoshyne Products, Copewood & Davis Sts., Camden, N. J.
Killen Kemical Ko., Lansing, Mich. "K. K. K." (See page 263.)
Kleno Mfg. Co., North Weymouth, Mass.
Krystal Soiloff—See Hollingshead Co.
Lauts Bros. & Co., 44 Hanover St., Buffalo, N. Y.
Lava—See Waltke & Co.
Livingston Co., 161 Day St., New Haven, Conn. "I. C. U."
M & M—See Armour Soap Works.
Magic—See Auto Remedy Co.
Meckano—See Garnet Co.
Mid-Earth Mfg. Co., 2166 W. 53d St., Cleveland, O.
Mione Mfg. Co., Collingsdale, Pa.
Mirrolike Mfg. Co., 208 Eighth St., Long Island City, N. Y.
Mobo—See Stanley Co.
Monahan Antiseptic Co., 166-72 N. Curtis St., Chicago, Ill.
Monogram—See New York Lubricating Oil Co.
Munger Products Co., 220 Fifth Ave., New York, N. Y. "Wundrmek."
New York Lubricating Oil Co., 116 Broad St., New York, N. Y. "Monogram."
Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 277.)
Norwesco—See Northwestern Chemical Co.
O-So-Easy—See Boston Blacking Co.
O-So—See Rand & Byam.
Pacific Coast Borax Co., 199 William St., New York, N. Y. "Grime-Off."
Parker Rishor Mfg. Co., 841 Maple St., Rochester, N. Y. "Parko."
Parko—See Parker Rishor Mfg. Co.
Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."
Pex Products Co., Buffalo, N. Y.
Pitts Sanitary Co., Newport, R. I. "Grim-off."
Presto—See Feibing Chemical Co.
Pumex—See Armour Soap Works.
Radium Compound Co., Phoenix, N. Y.
Rand & Byam, Charlestown, Mass. "O-So."
Rath Mfg. Co., Hedley & Richmond Sts., Philadelphia, Pa. "Imp."
Revivo—See Heaney Mfg. Co.
Rexine Co., Pennsylvania & River Sts., Sheboygan, Wis.
Rie-Nie—See Durkee-Atwood Co.
S. & H.—See American Soap & Washoline Co.
Sapo—See Boston Blacking Co.
Shofo—See Stanley Co.
Skat Co., 791 Park St., Hartford, Conn.
Skidoo—See Yeasell-Goldstein Corp.
Slick-Shine—See Harbor Sales & Mfg. Co.
Slikup—See Arnold, N. B.
Solly Co., C. B., Drexel Bldg., Philadelphia, Pa.
Soo-Off-E-Z—See Esner Mfg. Co.
Spee-Dee—See States Chemical Co.
Stanley Co., John T., 30th St. & North River, New York, N. Y. "Shofo," "Mobo." (See page 871.)
States Chemical Co., 697 W. Austin Ave., Chicago, Ill. "Spee-Dee."
Sterno Corp., New York, N. Y. (See page 1147.)
Symonds Co., Joseph H., Westfield, Mass. "Ferret."
Tatlock Bros., 188 Tremont St., Rochester, N. Y. "Tat's."
Tat's—See Tatlock Bros.
Tay-Miller Mfg. Co., 20th & Market Sts., Philadelphia, Pa. "Hand-I-Wash."
Teeaness Products Co., Nyack, N. Y.
Trosien, Charles G., 108 Franklin Blvd., Pontiac, Mich.
Uko—See Utility Co.
United States Soap Co., 514-16 Reading Rd., Cincinnati, O.
Uno Mfg. Co., 6433 Ravenswood Ave., Chicago, Ill.
Utility Co., 636 W. 44th St., New York, N. Y. "Gre-Solvent," "Uko."
Uzum Products Co., 74 Grand St., New York, N. Y.
Vanco Co., 103 Park Ave., New York, N. Y.
Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."
Waltke & Co., Wm. E., Grand Ave. & Second St., St. Louis, Mo. "Lava."
Wenzelmann Mfg. Co., Galesburg, Ill.
White & Bagley Co., Worcester, Mass. "Cleanzum." (See page 663.)
Whiz—See Davies-Young Soap Co.
Winn, Wm. R., 148 Maiden Lane, New York N. Y. "Cleaneasy."
Wonder Worker—See Hall-Thompson Co.
Wundrmek—See Munger Products Co.
Yeasell-Goldstein Corp., 489 Buttles Ave., Columbus, O. "Skidoo."

SOAPSTONE, TIRE—See Talc, Tire

SOCIETIES—See Associations and Societies

SOCKET PLATES, AIRPLANE WING—See Plates, Airplane Wing Socket

SOCKET WRENCHES FOR FORDS—See Wrenches, Special

SOCKETS, ANTI-RATTLING BALL, FOR FORDS—See Anti-Rattlers, Radius Rod; also Anti-Rattlers, Steering Rod

SOCKETS, Bow

(For Slat Irons—See Irons, Slat)

American Forging & Socket Co., Pontiac, Mich.
Ashtabula Bow Socket Co., 99-101 Prospect St., Ashtabula, O.
Bonney Vise & Tool Works, Allentown, Pa. (See page 437.)
Brewer Tichener Corp., Cortland, N. Y. "Pioneer," "Cortland." (See page 567.)
Cortland—See Brewer Tichener Corp.
Defco—See Detroit Forging Co.
Defco—See Scherer & Co.
Desoco—See Detroit Socket Co.
Detroit Forging Co., 284 Mt. Elliott Ave., Detroit, Mich. "Defco."
Detroit Socket Co., 2744 W. Jefferson Ave., Detroit, Mich. "Desoco."
Mascot—See Detroit Forging Co.
Pioneer—See Brewer Tichener Corp.
Scherer & Co., H., 440 Jefferson Ave., E., Detroit, Mich. "Defco."
Scott Co., Geo. W., 1831 E. 55th St., Cleveland, O.
Sharrer Patent Top Co., 250 W. 54th St., New York, N. Y. (See page 1001.)
Standard Equipment Co., Lorain Ave. & W. 100th St., Cleveland, O.

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SALES BRANCHES

Double Seal Ring Co.

Atlanta, Ga.....66½ N. Forsyth Street
Baltimore, Md.....1710 N. Charles Street
Boston, Mass.....107 Massachusetts Ave.
Buffalo, N. Y.....1377 Main Street
Chicago, Ill.....1517 South Michigan Ave.
Cleveland, Ohio.....1841 Euclid Avenue
Dallas, Texas.....208 Browder Street
Denver, Colorado....430 Eighteenth Street
Detroit, Mich..4602 Grand River Ave., W.
El Paso, Texas.....412 Myrtle Avenue
Fresno, Cal.....1922 Tuolumne Street
Fort Worth, Texas.....316-328 Lake Street
Houston, Texas.....1212 Main Street
Kansas City, Mo.....214 E. 17th Street
Little Rock, Ark.....414 Louisiana Street
Los Angeles, Cal.....603 West Pico Street
Memphis, Tenn.....128 Monroe Avenue
Milwaukee, Wis.....160 Mason Street
Minneapolis, Minn...825 Hennepin Avenue
New Orleans, La....808 St. Charles Street
New York, N. Y.....1834 Broadway
Oklahoma City, Okla....121 West Third St.
Omaha, Neb.....415 South 24th Street
Pittsburgh, Pa...Hiland and Baum Streets
206 Werner Building
Portland, Ore.....413½ Burnside Street
Sacramento, Cal.....1008 J Street
San Antonio, Tex....314 Kampmann Bldg.
San Francisco, Cal.....1124 Polk Street
Seattle, Wash.....1213 Pine Street
Stockton, Cal.....106 N. California Street
Tacoma, Wash.....771 Broadway
Tulsa, Okla.....208 E. 2nd St.
Waco, Texas.....100 Provident Building
Windsor, Ont., Canada.19 E. Sandwich St.

The Double Seal Ring Co. carries a complete stock of all sizes of Double Seal Piston Rings at each of the above Branches, where the jobbing trade can get its supply quickly.

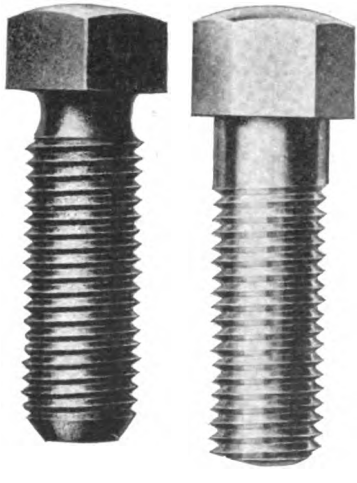
Double Seal Ring Co.

General Sales Offices:
1517 S. Michigan Ave., Chicago, Ill.

CLEVELAND WROUGHT PRODUCTS

The Following Are Made at Plant Number 2

Cap Screws
Set Screws
Studs
Connecting Rod Bolts
Clevis Pins



The Following Are Made at Plant Number 1

Steel Stampings
Special Washers
Riveting Burrs

The Cleveland Wrought Products Co.

South of Denison Avenue
CLEVELAND, OHIO

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SOCKETS, Electric Lamp

Accessories Mfg. Co., 2311-29 N. Crawford Ave., Chicago, Ill.

Aid Mfg. Co., 2625-31 Stewart Ave., Chicago, Ill. "Amco." (See page 547.)

Amco—See Aid Mfg. Co.

Brock Rubber Co., A. S., 100 Purchase St., Boston, Mass.

Chicago Electric Mfg. Co., 2317 S. Halsted St., Chicago, Ill. "Handy."

Connecticut Telephone & Electric Co., Meriden, Conn.

Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass.

Douglas & Rudd Mfg. Co., Bronson, Mich.

Handy—See Chicago Electric Mfg. Co.

Higginson-Gibson Mfg. Co., 76 Atherton St. (Jamaica Plain), Boston, Mass.

Loewus, Edwin H., 304 W. 54th St., New York, N. Y. (See page 1185.)

Metal Specialties Mfg. Co., 338-52 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 547.)

Millwood-Brackett Co., 1601 Locust St., Des Moines, Iowa. (See page 1151.)

Morse, Frank W., 289 Congress St., Boston, Mass. (See page 549.)

Parker-Wood Mfg. Co., 100 Purchase St., Boston, Mass.

Presto—See Metal Specialties Mfg. Co.

SOCKETS, LAMP—See Sockets, Electric Lamp

SOCKETS, STAKE—See Pockets, Truck Stake

SOCKETS, TOP—See Sockets, Bow

SOFT RUBBER TUBING—See Tubing, Soft Rubber

SOLDER, Aluminum

A & S—See Arrosmith & Sarchet.

Acme—See Universal Fluxine Co.

Allen Co., L. B., 4548 N. Lincoln St., Chicago, Ill. "Alumni-Soder."

Alumi-Soder—See Allen Co.

Aluminum Brazing Solder Co., Montgomery Bldg., Chester, Pa. "Peters."

Aluminum Co. of America, Oliver Bldg., Pittsburgh, Pa.

Alumunite Mfg. Co., 427 Fourth Ave., New York, N. Y.

Alumalux Co., E. Shelby St., Sidney, O.

American Mirete Corp., 106 W. 52d St., New York, N. Y.

Arrosmith & Sarchet, Clinton, Ind. "A & S."

Arrow—See Lester Co.

Austin & Co., M. B., 706 W. Jackson Blvd., Chicago, Ill. "Mincer's."

Berry & Co., L. H., 2409 Lyndale Ave., S., Minneapolis, Minn.

City Brass Foundry Co., 5318 St. Clair Ave., N. E., Cleveland, O.

Crown Aluminum Solder Co., 888 E. 134th St., New York, N. Y.

Delaware Brass & Aluminum Co., 20th & Walnut Sts., Muncie, Ind.

Eagle Smelting & Refining Works, Trenton, N. J.

Electric Smelting & Aluminum Co., 555 W. Jackson St., Lockport, N. Y.

Federal Mfg. Co., 27 Haymarket Sq., Boston, Mass. "Supreme."

Gardiner & Co., G., 7405 Superior Ave., Cleveland, O.

Hayman & Co., Michael, 856 E. Ferry St., Buffalo, N. Y.

Howard Metal Co., Second & Canal Sts., Reading, Pa.

Ideal Bronze Co., 1265-69 E. 55th St., Cleveland, O. (See page 205.)

Ideal Metal Co., 1212 W. Liberty St., Cincinnati, O.

Illinois Smelting & Refining Co., 410 N. Peoria St., Chicago, Ill.

Jacobson & Sons Co., I. M., 920-28 Catherine St., Detroit, Mich. "Motex."

Janney-Steinmetz & Co., Philadelphia, Pa. (See page 951.)

Langsenkamp, F. H., 130 Shelby St., Indianapolis, Ind.

Lester Co., Fayetteville, N. Y. "Arrow."

Lewis & Bros. Co., John T., 437 Chestnut St., Philadelphia, Pa.

Mackenzie-Waterhouse Co., 828 Transportation Bldg., Chicago, Ill. "Silverine." (See page 1171.)

Metals Mfg. & Alloys Co., 1227 Prospect Ave., Cleveland, O.

Michigan Smelting & Refining Co., 7885 Jos. Campau Ave., Detroit, Mich.

Mincer's—See Austin & Co.

Mirete Co. of New York, 304 W. 39th St., New York, N. Y. (See page 987.)

More-Jones Brass & Metal Co., 3132-34 N. Broadway, St. Louis, Mo.

Motex—See Jacobson & Sons Co.

National Products Co., Kokomo, Ind.

Naulty, James, 2634 N. 11th St., Philadelphia, Pa.

Peters, Inc., Widener Bldg., Philadelphia, Pa. (See page 753.)

Pittsburgh White Metal Co., 3116 Penn Ave., Pittsburgh, Pa. "Rinehart."

Richards & Co., 200-06 Causeway St., Boston, Mass. "Rico."

Rico—See Richards & Co.

Rinehart—See Pittsburgh White Metal Co.

Sasco—See Smith Aluminum Solder Mfg. Co.

Seaboard Metal Corp., 221 Randolph Ave., Jersey City, N. J.

Semper Idem—See Wildes Son.

Smith Aluminum Solder Mfg. Co., 1425 N. Felton St., Philadelphia, Pa. "Sasco."

So-Luminum Mfg. & Engineering Co., 1334 Broadway, New York, N. Y.

Sterling Aluminum Solder Co., 501 Eleventh St., Brooklyn, N. Y.

Supreme—See Federal Mfg. Co.

Thwing, C. B., 445 N. Fifth St., Philadelphia, Pa.

Transco—See Transmuted Metals Co.

Transmuted Metals Co., 2334 Chicago Ave., Chicago, Ill. "Transco."

Twentieth Century Co., 1028 Holmes St., Lansing, Mich.

United Smelting & Aluminum Co., New Haven, Conn. "W. F."

Universal Fluxine Co., 604 S. Main St., Urbana, O. "Acme."

Victory Aluminum Solder Co., 1440 S. Michigan Ave., Chicago, Ill.

W. F.—See United Smelting & Aluminum Co.

Wensley Metal Products Co., 18th & Blake Sts., Denver, Colo.

Western Kelli-Metal Corp., Denver, Colo.

Wildes Son, Thomas, 14 Dover St., New York, N. Y. "Semper Idem."

SOLDER, Bar and Wire

Birkenstein & Sons, S., 1032 W. North Ave., Chicago, Ill. (See page 633.)

Blatchford Co., E. W., 230 N. Clinton Ave., Chicago, Ill.

Chicago Solder Co., 4201 Wrightwood Ave., Chicago, Ill. "Kester." (See page 421.)

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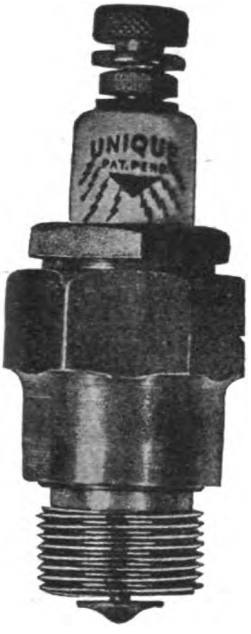
UNIQUE

SPARK PLUG



Here is a spark plug that is easy to sell because it prevents trouble by anticipating it.

The one weak place in every spark plug is in the point, because this becomes full of soot.

This is eliminated in the UNIQUE plug, owing to the way it is constructed with the tapered soot deflector.

Write us for full details and terms to the trade to-day.

Retail Price-$1.25

Niles Mfg. Co
Niles, Michigan

PHILADELPHIA DIAMOND GRID BATTERY

WITH THE PHILCO SLOTTED RETAINER

Guaranteed Two Years

The longest and strongest guarantee of any pleasure car, starting, lighting and ignition battery. Made possible by the Diamond Grid, the Quarter-Sawed Hardwood Separators and the new patented Philco Retainer.

A booklet covering in detail this powerfully advertised "Cord Tire Battery" will be sent upon request. We've an interesting proposition for high-grade dealers as well as

THE RIGHT BATTERY FOR YOUR AUTOMOBILE

Philadelphia Storage Battery Company
Ontario & C Sts., Phila., Pa.

SPRINGOID PACKING

The Ideal Packing for Water Gasoline Oil, etc.

Gaskets Cut From Any Material

Springman Paper Products Co.
Detroit, Mich.

THE IDEAL LUGGAGE CARRIER

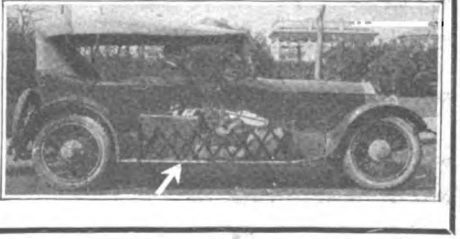
Sells on Sight!

Puts Passengers and Luggage each in their proper place—the luggage safe, out of the way, yet always in easy reach.

This all-steel, folding and adjustable carrier can be attached or removed without tools. Fits all running boards and extends from 6 to 66 inches. Height 16 inches. Can be carried in tool box when not in use.

Write for Prices and Territory

WILLIAM SCHWENN IRON WORKS
822-832 Lexington Avenue, Brooklyn, N. Y.



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SOLDER, Bar & Wire (Continued)

Columbia Smelting & Refining Works, Brooklyn, N. Y.
Dutch Boy—See National Lead Co.
Emetco—See Empire Metal Co.
Empire Metal Co., 820 E. Water St., Syracuse, N. Y. "Emetco."
4-A Products Co., 3103 Downing St., Denver, Colo. "Mendall." (See page 879.)
Gardiner Metal Co., 1368 W. Lake St., Chicago, Ill.
Henning & Sons, V., 330 Belmont Ave., Brooklyn, N. Y.
Hoyt Metal Co., 300 N. Broadway, St. Louis, Mo. (See page 1179.)
Kahn Bros., 785-97 Humboldt St., Brooklyn, N. Y. "Victory."
Kester—See Chicago Solder Co.
Lehman Bros., Fourth & Jefferson Sts., Hoboken, N. J.
Lissberger & Son, Marks, 281 Borden Ave., Long Island City, N. Y.
MacKenzie-Waterhouse Co., 828 Transportation Bldg., Chicago, Ill. (See page 1171.)
Mendall—See 4-A Products Co.
Merchant & Evans Co., 2035 Washington Ave., Philadelphia, Pa.
Metals Mfg. & Alloys Co., 1227 Prospect Ave., Cleveland, O.
Michigan Smelting & Refining Co., 7885 Jos. Campau Ave., Detroit, Mich.
More-Jones Brass & Metal Co., 3132-44 N. Broadway, St. Louis, Mo.
National Lead Co., 111 Broadway, New York, N. Y. "Dutch Boy." (See page 491.)
North American Smelting Co., 900 W. Thompson, St., Philadelphia, Pa.
Pittsburgh White Metal Co., 3116 Penn Ave., Pittsburgh, Pa. "Rinehart."
Richards & Co., 200-06 Causeway St., Boston, Mass.
Rinehart—See Pittsburgh White Metal Co.
Taylor Co., N. & G., 803 Chestnut St., Philadelphia, Pa.
United American Metals Corp., 192 Diamond St., Brooklyn, N. Y.
Victory—See Kahn Bros.
Wildes Son, Thomas, 14 Dover St., New York, N. Y.

SOLDER, SELF FLUXING—See Solder, Bar and Wire

SOLDER, WIRE—See Solder, Bar and Wire

SOLDERING ACID—See Flux, Soldering

SOLDERING FLUID—See Flux, Soldering

SOLDERING FLUX—See Flux, Soldering

SOLDERING FURNACES—See Furnaces, Soldering

SOLDERING PASTE—See Flux, Soldering

SOLDERLESS COUPLINGS—See Unions, Tubing

SOLDERLESS FITTINGS — See Unions, Tubing

SOLID TIRES—See Tires, Solid

SOLID WRENCHES—See Wrenches, Nut and Bolt

SOLUTIONS, RUST PREVENTING — See Compounds, Rust Preventing and Removing

SPADES and Shovels, Collapsible

(For carrying on car when touring)

Barnard Specialty Co., 3300 Maple Ave., Los Angeles, Cal.
Ideal Mfg. Co., 14th & Harrison Sts. (North Kansas City), Kansas City, Mo.
Nostuk Mfg. Co., 2124 N. Clark St., Chicago, Ill. (See page 879.)
Waynesburg Pressed Steel Co., Waynesburg, Pa.
Wood Shovel & Tool Co., Piqua, O.
Wyoming Shovel Works, Wyoming, Pa.

SPANNERS, BOLT—See Wrenches, Nut and Bolt

SPARE TIRE COVERS—See Covers, Spare Tire

SPARE TIRE HOLDERS—See Holders, Tire

SPARE TIRE LOCKS—See Locks, Spare Tire

SPARE WHEEL CARRIERS—See Holders or Carriers, Spare Wheel

SPARE WHEEL HOLDERS — See Holders or Carriers, Spare Wheel

SPARE WHEELS—See Wheels, Special

SPARE WHEELS, WRECKING — See Trucks, Castors and Spare Wheels, Wrecking

SPARK ARRESTERS—See Arresters, Tractor Spark

SPARK COIL BOXES—See Boxes, Spark Coil

SPARK COILS—See Coils, Spark

SPARK GAPS—See Gaps, Spark

SPARK INDICATORS—See Gaps, Spark

SPARK LEVER GRIPS—See Grips, Throttle

SPARK LEVER LOCKS FOR FORDS—See Locks, Spark Lever

SPARK PLUG BRUSHES—See Brushes, Spark Plug

SPARK PLUG BUSHINGS—See Bushings, Spark Plug Testing

SPARK PLUG CASES—See Cases, Spark Plug

SPARK PLUG CLEANERS—See Cleaners, Spark Plug

SPARK PLUG MICA—See Mica

SPARK PLUG POINT PROTECTORS—See Protectors, Spark Plug Point

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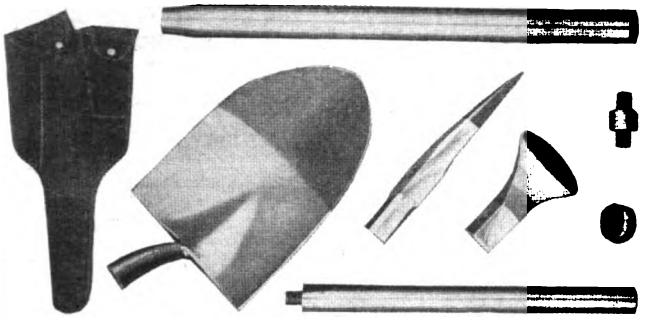

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Band steel, made in Types A and B. Type A is non-adjustable; Type B is adjustable for wear of lining or drums; by spring jaws of shoes to one side by placing washers on jaws of shoe and securing by bolt and nut. Once wheels are applied it is necessary to remove them to make adjustment.

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SPARK PLUG PORCELAINS—See Porcelain

SPARK PLUG SWITCHES—See Switches, Spark Plug

SPARK PLUG TERMINALS—See Terminals, Wire

SPARK PLUG TESTERS—See Testers, Spark Plug

SPARK PLUG WRENCHES—See Wrenches, Nut and Bolt

SPARK PLUGS—See Plugs, Spark

SPARK POINTS—See Points, Sparking

SPARK RETARDERS FOR FORDS—See Retarders, Automatic Spark

SPARK TIMERS—See Timers, Ignition

SPARK AND THROTTLE ROD ANTI-RATTLERS FOR FORDS—See Anti-Rattlers, Spark and Throttle Rod

SPEAKING TUBES—See Tubes, Speaking

SPECIAL AIRCRAFT BOLTS AND NUTS—See Bolts and Nuts, Special Aircraft

SPECIAL BODIES FOR FORDS—See Bodies, Special Commercial; also Bodies, Special Passenger

SPECIAL BOLTS—See Bolts, Special Demountable Rim

SPECIAL CLUTCH HOUSINGS—See Housings, Special Clutch

SPECIAL CONTRACT WORK—See Machine Work; also Screw Machine Products; also Stampings

SPECIAL DIMMING OR DEFLECTING LENSES—See Dimmers or Shades, Headlight

SPECIAL FRONT WHEEL SPINDLES FOR FORDS—See Spindles, Special Front Wheel

SPECIAL GARAGE DOORS—See Doors, Special Garage

SPECIAL JACKS—See Jacks, Special

SPECIAL LENSES—See Dimmers, Headlight

SPECIAL LIGHT WEIGHT PISTONS FOR FORDS—See Pistons, Special Light Weight

SPECIAL MACHINE WORK—See Machine Work

SPECIAL MACHINERY DESIGNERS—See Designers, Special Machinery and Tool

SPECIAL RATIO REAR BEVEL GEARS FOR FORDS—See Gears, Special Ratio Rear Bevel

SPECIAL ROAD SIGNS—See Signs, Special Road

SPECIAL TOOL DESIGNERS—See Designers, Special Machinery and Tool

SPECIAL STEPS—See Boards, Running

SPECIAL TOP CURTAINS—See Curtains, Special Top

SPECIAL TRAILER AXLES—See Axles, Special Trailer

SPECIAL TRUCK SEATS—See Seats, Special Truck

SPEED CHANGE GEARS—See Gears, Transmission

SPEED CHANGE LEVERS—See Levers, Brake

SPEED CONTROLLERS—See Governors, Gasoline Engine

SPEED INDICATORS, AIRPLANE—See Indicators, Airplane Speed

SPEED INDICATORS, TRACTOR—See Indicators, Tractor Engine Speed

SPEED METERS—See Speedometers

SPEEDOMETER DIALS—See Dials, Luminous

SPEEDOMETER GEARS—See Gears and Pinions, Speedometer

SPEEDOMETER JOINTS—See Joints, Speedometer Swivel

SPEEDOMETER LAMPS—See Lamps, Electric Dash

SPEEDOMETER LAMPS FOR FORDS—See Lamps, Electric Speedometer

SPEEDOMETER PINIONS—See Gears and Pinions, Speedometer

SPEEDOMETER REPAIR PARTS—See Parts, Speedometer Repair

SPEEDOMETER SHAFT LUBRICATORS—See Lubricators, Speedometer Shaft

SPEEDOMETERS

Champion Ignition Co., Flint, Mich. (See page 729.)

Corbin Brown—See Corbin Screw Corp.

Corbin Screw Corp., High St., New Britain, Conn. "Corbin Brown."

Detroit Instrument Co., 251 E. Jefferson Ave., Detroit, Mich.

Hamilton Corp., Columbia Ave., Lancaster, Pa.

Johns-Manville Co., H. W., Madison Ave. & 41st St., New York, N. Y.

Smith & Sons, S., 154 Nassau St., New York, N. Y. (See page 301.)

Standard Thermometer Co., 65 Shirley St., Roxbury, Mass. (See page 883.)

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SPEEDOMETERS (Continued)

Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 177.)
Troy Carriage Sun Shade Co., Troy, O.
Van Sicklen Co., Elgin, Ill. (See page 1105.)
Veeder Mfg. Co., 22 Sargeant St., Hartford, Conn. (See page 637.)
Waltham Watch Co., Waltham, Mass.

SPEEDOMETERS, for Fords

Corbin Screw Corp., High St., New Britain, Conn.
Johns-Manville Co., H. W., Madison Ave. & 41st St., New York, N. Y.
Simplex Co., 1 Beacon St., Boston, Mass.
Standard Thermometer Co., 65 Shirley St., Roxbury, Mass. (See page 883.)
Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 177.)
Van Sicklen Co., Elgin, Ill. (See page 1105.)

SPHERICAL BALLOONS—See Balloons, Spherical

SPINDLE ARM SILENCERS FOR FORDS —See Anti-Rattlers, Spindle Arm

SPINDLES, Emergency Rear Axle, for Fords

Ekern Bros. Mfg. Co., Flandreau, S. Dak.
Kraenter & Co., Newark, N. J. (See page 711.)
Slipon Co., 207 Farwell Ave., Milwaukee, Wis.

SPINDLES, FRONT WHEEL, FOR FORDS —See Spindles, Special Front Wheel

SPINDLES, Special Front Wheel—For Fords

Mospico—See Motor Spindle Corp.
Motor Spindle Corp., 138 Jefferson Ave. E., Detroit, Mich. "Mospico."

SPIRAL WIRE BELTS—See Belts, Spiral Wire

SPLASH PANS FOR FORDS—See Pans, Radiator Splash

SPOKE TIGHTENING COMPOUNDS—See Compounds, Wood Wheel Tightening

SPOKES, Wire

Kalamazoo Spoke & Nipple Co., Kalamazoo, Mich.
Maryland Metal Products Co., Hagerstown, Md.
National Screw & Tack Co., 2440 E. 75th St., Cleveland, O.
Standard Co., Torrington, Conn.
Wire Goods Co., 28 Union St., Worcester, Mass.

SPONGES and CHAMOIS

American Sponge & Chamois Co., 47 Ann St., New York, N. Y. "Mermaid."
Bel Jan-Tan—See Hart Export Co.
Bloch, Joseph, 51 Cliff St., New York, N. Y. (Importer.)
Bloch & Sons, A., 101 Barclay St., New York, N. Y.
Carbondale Sponge Co., 73 Warren St., New York, N. Y. (Importers.)
Chamoline—See Van Schaack & Sons.
Colossus—See Rhodes & Co.
Consumers Sponge Co., 675-85 S. Salina St., Syracuse, N. Y. "Usaspong."
Davis & Sons, D., 45 Warren St., New York, N. Y. (Importers.) "Vel Volla."
Florida Sponge & Chamois Co., 73 Gold St., New York, N. Y. (Importers.)
Frierich & Mansell, 74 Grand St., New York, N. Y. (Importers.)
Fuchs Co., Max, 244 Pearl St., New York, N. Y.
Greek-American Sponge Co., 300 W. Randolph St., Chicago, Ill. (Importers.)
Hart Export Co., 366 Fifth Ave., New York, N. Y. "Bel Jan-Tan."
Isaacs Co., A., 53 Beekman St., New York, N. Y.
Louden & Hill, 624 Arch St., Philadelphia, Pa.
Mermaid—See American Sponge & Chamois Co.
Miami Drug Co., Miami, Fla.
Nassau Sponge Co., 232 W. Lake St., Chicago, Ill.
National Sponge & Chamois Co., 158 William St., New York, N. Y. (Importers.)
Niehaus Co., Jos., 341 W. Fourth St., Cincinnati, O. (Importers.)
Rhodes & Co., James H., 513 W. Austin Ave., Chicago, Ill. (Importers.) "Colossus."
Smith, Kline & French Co., 429 Arch St., Philadelphia, Pa.
Usaspong—See Consumers Sponge Co.
Van Schaak & Sons, Peter, 114-18 W. Lake St., Chicago, Ill. "Chamoline."
Vel Volla—See Davis & Sons.
Western Robe Mills, 24 E. Eighth St., Chicago, Ill. (Importers.)

SPOOL SILK—See Silk, Spool

SPOT LAMPS—See Lights, Spot

SPOTLIGHT EXTENSION HANDLES—See Handles, Extension Spotlight

SPOTLIGHTS—See Lights, Spot

SPRAGS, RATCHET, FOR FORDS — See Stops, Ratchet

SPREADERS, RIM—See Tools, Demountable Rim Contracting

SPREADERS, SPRING LEAF—See Tools, Spring Leaf

SPREADERS, TIRE—See Tools, Tire

SPRING BELTS—See Belts, Spiral Wire

SPRING BOLTS—See Bolts, Spring Shackle

SPRING BUMPERS—See Bumpers, Spring

SPRING CLIPS—See Clips, Spring

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Reichert's Emergency Tire Chains are easily and quickly adjusted when you are in trouble. Place the malleable clamp on the spoke, then slip the chain over the tire and hook the snap in the loop—that's all. No jacks or tools required.

A set of four chains, packed in a bag, is sufficient to pull you out of the mud, sand or snow.

Important—State size of tires when ordering.

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Racine, Wis.

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The Most Powerful
Compact Pump
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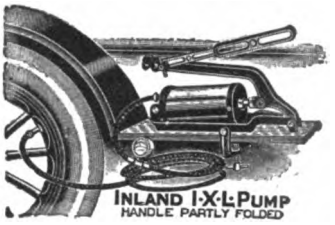

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Puts New Life in Plugs
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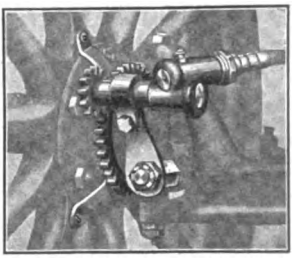

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SPRING COTTERS—See Pins, Cotter

SPRING ENGINE STARTERS—See Starters, Mechanical or Spring Engine

SPRING HANGERS FOR FORDS—See Hangers, Spring

SPRING LEAF LUBRICATING COVERS—See Cups and Covers, Spring Leaf Lubricating

SPRING KEY PRIMING CUPS—See Cups, Spring Key Priming

SPRING LEAF LUBRICATING CUPS—See Cups and Covers, Spring Leaf Lubricating

SPRING LEAF LUBRICATING STRIPS—See Strips, Spring Leaf Lubricating

SPRING LEAF OIL CUPS—See Cups and Covers, Spring Leaf Lubricating

SPRING LEAF OILERS—See Cups and Covers, Spring Leaf Lubricating

SPRING LEAF SEPARATING TOOLS—See Tools, Spring Leaf Separating

SPRING LIFTING TOOLS—See Tools, Valve Spring Lifting and Compressing

SPRING LUBRICANTS — See Lubricants, Spring

SPRING LUBRICATORS—See Lubricators, Spring and Shackle Bolt

SPRING OILERS—See Cups and Covers, Spring Leaf Lubricating

SPRING OILING BOXES—See Cups and Covers, Spring Leaf Lubricating

SPRING REPAIR CLAMPS—See Clamps, Spring Repair

SPRING SHACKLE BOLTS—See Bolts, Spring

SPRING SPREADERS—See Tools, Spring Leaf Separating

SPRING STARTERS—See Starters, Mechanical or Spring

SPRING STEEL—See Steel, Spring

SPRING STRAIGHTENING MACHINES—See Machines, Leaf Spring Straightening

SPRING SUPPORT CLAMPS—See Clamps, Special Cantilever Spring Support

SPRING SUPPORTS, FOR FORDS — See Supports, Spring

SPRING TESTING MACHINES—See Machines, Spring Testing

SPRING WASHERS—See Washers, Steel Spring; also Nuts and Washers, Lock

SPRING WHEELS—See Wheels, Special

SPRING WIRE—See Wire, Steel Spring

SPRINGS, CHAIN TIGHTENING — See Tighteners, Tire Chain

SPRINGS, COIL—See Springs, Machinery

SPRINGS, CUSHION—See Springs, Seat

SPRINGS, DUMMY FRONT, FOR FORDS—See Extensions, Dummy Frame

SPRINGS, ENGINE VALVE—See Springs, Machinery

SPRINGS, Engine Valve, for Fords

Edelmann & Co., E., 2633 N. Crawford Ave., Chicago, Ill.

Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass. (See page 417.)

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)

U. S. Metal Goods Co., 5311 Euclid Ave., Cleveland, O. (See page 685.)

SPRINGS, Leaf

Alloy Steel Spring Co., Jackson, Mich.

American Autoparts Co., 1807 Gratiot Ave., Detroit, Mich. (See page 912.)

American Spiral Spring & Mfg. Co., 56th & Butler Sts., Pittsburgh, Pa.

Anchor—See Sheldon Axle & Spring Co.

Beams Spring Co. (Columbia Heights), Massillon, O.

Better—See New Era Spring & Specialty Co.

Betts Spring Co., 888 Folsom St., San Francisco, Cal.

Buckeye Spring Works, 1919 Race St., Cincinnati, O.

Buffalo Automobile Spring Co., 146 Virginia St., Buffalo, N. Y. (See page 1019.)

C. G. Spring Co., Kalamazoo, Mich. (See page 923.)

Cambria Spring Co., 916-18 S. Los Angeles St., Los Angeles, Cal.

Champ Spring Co., 2107 Chouteau Ave., St. Louis, Mo.

Champion Auto Spring Co., 3141-49 Pine St., St. Louis, Mo. (See page 933.)

Cooper Spring Co., Leader News Bldg., Cleveland, O.

Delany & Son, D., 214 Liberty St., Newark, N. J.

Detroit Motor Parts Co., 132-35 W. Larned St., Detroit, Mich. (See page 551.)

Detroit Steel Products Co., 2250 E. Grand Blvd., Detroit, Mich.

Duer Spring & Mfg. Co., Pittsburgh, Pa.

E. C.—See Hoover Spring Co.

E. C. V.—See Hoover Spring Co.

Garden City Spring Works, 2300 Archer Ave., Chicago, Ill.

Harvey Spring & Forging Co., 106A 17th St., Racine, Wis. (See page 981.)

Higgins Spring & Axle Co., Dept. 115, Racine, Wis. "Quality." (See page 1197.)

Hoover Spring Co., 201-29 Franklin St., San Francisco, Cal. "E. C.," "E. C. V."

Iron City Spring Co., Pittsburgh, Pa. (See page 957.)

Jenkins Vulcan Spring Co., Richmond, Ind. "Vulcan." (See page 947.)

Keystone Spring Works, 13th & Buttonwood Sts., Philadelphia, Pa.

Laher Auto Spring Co., 84 N. 15th St., Portland, Ore.

Lewis Spring & Axle Co., 42 Mollier St., Chelsea, Mich.

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Scientifically Heat-Treated
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Maximum of Elasticity & Endurance
with
Minimum of Vibration

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Liggett Spring & Axle Co., Monongahela, Pa.
Lyons Co., Edward F., 1600-34 E. Euclid Ave. Detroit, Mich.
Maremont Mfg. Co., 916-18 S. Wabash Ave., Chicago, Ill. (See page 207.)
Mather Spring Co., Toledo, O. (See page 885.)
Merrill Spring Co., E. R., 526-32 W. 28th St., New York, N. Y.
National Spring Co., New Castle, Ind. "Stanley." (See page 1025.)
New Era Spring & Specialty Co., 51-55 Cottage Grove St., S. W., Grand Rapids, Mich. "Better."
Northwestern Spring Mfg. Co., 3716-28 University Ave., N. E., Minneapolis, Minn. (See page 957.)
Palmer, Jos., 333 Rutherford Ave., Boston, Mass.
Pasco—See Pittsburgh Auto Spring Co.
Penn Spring Works, Baldwinsville, N. Y.
Perfection—See Standard Parts Co.
Pittsburgh Auto Spring Co., 5915 Centre Ave., Pittsburgh, Pa. "Pasco."
Quality—See Higgins Spring & Axle Co.
Rowland, William & Harvey, Philadelphia, Pa.
Service Spring Co., Indianapolis, Ind.
Sheldon Axle & Spring Co., Wilkes-Barre, Pa. "Anchor." (See pages 758 and 759.)
Shunk Mfg. Co., Bucyrus, O.
Spring Perch Co., Long Brook Ave., Stratford, Conn.
Stan-Par—See Standard Parts Co.
Standard Parts Co., Cleveland, O. "Stan-Par," "Perfection." (See page 1149.)
Standard Steel Spring Co., Coraopolis, Pa.
Stanley—See National Spring Co.
Sterling Spring Co., 2142-62 Scranton Rd., Cleveland, O.
Temme—See Triple Action Spring Co.
Titanic—See Tuthill Spring Co.
Triangle Automobile Spring Co., 30th St. & Penn Ave., Pittsburgh, Pa.
Triple Action Spring Co., 2810-12 S. Michigan Blvd., Chicago, Ill. "Temme." (See page 1097.)
Triple Action Spring Co. of New York, 549 W. 59th St., New York, N. Y.
Troy Spring Works, 394-96 Congress St., Troy, N. Y.
Tuthill Spring Co., 760 Polk St., Chicago, Ill. "Titanic." (See page 1159.)
Vulcan—See Jenkins Vulcan Spring Co.

SPRINGS, Leaf, for Fords

(Including elliptic, semi-elliptic and cantilever springs to replace regular springs)

Buffalo Automobile Spring Co., 146 Virginia St., Buffalo, N. Y. (See page 1019.)
E. C.—See Hoover Spring Co.
E. C. V.—See Hoover Spring Co.
Garden City Spring Works, 2300 Archer Ave., Chicago, Ill. "Ralco."
H. L. G. Co.—Universal Sales Co.
Higgins Spring & Axle Co., Dept. 115, Racine, Wis. "Quality." (See page 1197.)
Hoover Spring Co., 201-29 Franklin St., San Francisco, Cal. "E. C." "E. C. V."
Hummer Auto Top Works, Tenth & Lincoln Sts., Chicago Heights, Ill.
New Era Spring & Specialty Co., 51-55 Cottage Grove St., S. W., Grand Rapids, Mich. "Saveur."
Quality—See Higgins Spring & Axle Co.
Ralco—See Garden City Spring Works.
Saveur—See New Era Spring & Specialty Co.
Shunk Mfg. Co., Bucyrus, O.
Staff, J. Wadsworth, 1225 S. Michigan Ave., Chicago, Ill. (Dealers.) (See page 1177 and 1193.)
Superior Steel Spring Co.—See Zinke Co.
Swartwout Do-It Spring Co., 7 E. 42d St., New York, N. Y.
Temme—See Triple Action Spring Co.
Titanic—See Tuthill Spring Co.
Triangle Automobile Spring Co., 30th St. & Penn Ave., Pittsburgh, Pa.
Triple Action Spring Co., 2810-12 S. Michigan Blvd., Chicago, Ill. "Temme." (See page 1097.)
Tuthill Spring Co., 760 Polk St., Chicago, Ill. "Titanic." (See page 1159.)
Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Superior Steel Spring Co., Mt. Clemens, Mich.)

SPRINGS, Machinery or Coil

Advance Spring & Wire Co., 1749-55 Carroll Ave., Chicago, Ill.
Aero—See Detroit Spring Co.
American Automatic Products Corp., 865 N. Sangamon St., Chicago, Ill.
American Spiral Spring & Mfg. Co., 56th & Butler Sts., Pittsburgh, Pa.
American Steel & Wire Co., Chicago, Ill. (See page 829.)
Barnes Co., Wallace, Bristol, Conn. (See page 887.)
Cary Spring Works, 240 W. 29th St., New York, N. Y.
Chatillon & Sons, John, 85-93 Cliff St., New York, N. Y.
Chicago Coil Spring Co., 328 N. Albany Ave., Chicago, Ill.
Cleveland Wire Spring Co., 1281 E. 38th St., Cleveland, O.
Cook Spring Co., 420 E. 106th St., New York, N. Y.
Cuyahoga Spring Co., 16612 Waterloo (See page 891.)
D'Arcy Spring Co., Kalamazoo, Mich. (See page 891.)
Detroit Spring Co., 61 E. Jefferson Ave., Detroit, Mich. "Aero."
Duer Spring & Mfg. Co., Pittsburgh, Pa.
Dunbar Bros. Co., 30 South St., Bristol, Conn.
Eagle—See Miller & Van Winkle.
Eureka Spring Co., 150 Bleecker St., New York, N. Y.
Fischer Spring Co., Chas., 473 Kent Ave., New York, N. Y.
Gardner Wire Co., 5648 Race Ave., Chicago Ill.
General Spring & Wire Co., 1930 Marston Ave., Detroit, Mich.
Gibson Co., William D., 1802 Clybourn Ave., Chicago, Ill. (See page 929.)
Hebb, George A., 70 William St., Newark N. J.
Hubbard Spring Mfg. Co., Pontiac, Mich. (See page 957.)
Humason Mfg. Co., Division A, Forestville, Conn. (See page 943.)
Kokomo Spring Co., Kokomo, Ind.

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"BARNES-MADE" PRODUCTS
1857
SCREW MACHINE PRODUCTS

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Miller & Van Winkle, 18 Bridge St., Brooklyn, N. Y. "Eagle."
Mitchell Spring Works, W. G., Johnstown, Pa.
Murray Mfg. Co., J. W., 571 Clay Ave., Detroit, Mich.
Murray Spring Co., Wm. A., 123-25 Sycamore St., Cincinnati, O.
New York Wire & Spring Co., Hoboken, N. J. (See page 889.)
Peck Spring Co., Plainville, Conn.
Railway Steel-Spring Co., 30 Church St., New York, N. Y.
Raymond Mfg. Co., W. Church St., Corry, Pa.
Reliance Spring & Mfg. Co., 3911 Second St., Brooklyn, N. Y.
Sabin Machine Co., Montpelier, Vt.
Tuck Mfg. Co., 74 Ames St., Brockton, Mass.
United Spring Co., 241 Centre St., New York, N. Y.
Wilson, Robert P., 20 Clinton St., Newark, N. J.
Wickwire Spencer Steel Corp., Worcester, Mass. (See pages 829 and 909.)

SPRINGS, Seat or Upholstery

Aero—See Detroit Spring Co.
American Automatic Products Corp., 865 N. Sangamon St., Chicago, Ill.
American Cushion Spring Co., Kalamazoo, Mich.
American Steel & Wire Co., Chicago, Ill. (See page 829.)
Barber Mfg. Co., 1818 Brown St., Anderson, Ind.
Black Velvet—See National Spring & Wire Co.
Champion—See Wing Co.
Chicago Coil Spring Co., 328 N. Albany Ave., Chicago, Ill.
D'Arcy Spring Co., Kalamazoo, Mich. (See page 891.)
Dean Wire Goods Co., 130 Austin Ave., Worcester, Mass.
Detroit Spring Co., 61 E. Jefferson Ave., Detroit, Mich. "Aero."
Eagle—See Miller & Van Winkle.
Excelsior—See Trenton Spring Mattress Co.
Fort Pitt Bedding Co., N. S., Pittsburgh, Pa. (See page 337.)
Gibson Co., William D., 1802 Clybourn Ave., Chicago, Ill. (See page 929.)
Globe Furniture Co., Northville, Mich.
Hemm Clutch Spring Co., 115 N. Main St., Piqua, O.
Interlocked Spring Seat Corp., 4801-19 S. Maplewood Ave., Chicago, Ill.
Jenks & Muir Mfg. Co., 6441 Hastings St., Detroit, Mich.
Kelley & Co., E., 561 Main St., Worcester, Mass.
Kokomo Spring Co., Kokomo, Ind.
Lace Web—See Trenton Spring Mattress Co.
Marshall Ventilated Mattress Co., 1454 S. Sangamon St., Chicago, Ill.
Miller & Van Winkle, 18 Bridge St., Brooklyn, N. Y. "Eagle."
Murray Spring Co., Wm. A., 123-25 Sycamore St., Cincinnati, O.
Nachman Springfilled Co., 2241-53 S. Halsted St., Chicago, Ill.
National Spring & Wire Co., Monroe & Mulberry Sts., Albion, Mich. "Black Velvet." "Rocky Road."
Reynolds Spring Co., Jackson, Mich. "Rough Rider." (See page 1115.)
Rocky Road—See National Spring & Wire Co.
Rough Rider—See Reynolds Spring Co.
Sagless Auto Seat Co., 2210 S. Wabash Ave., Chicago, Ill.
Simmons Mfg. Co., Kenosha, Wis.
Snell Co., Charles W., 321 S. Jefferson St., Chicago, Ill.
Staples & Hanford Co., Newburgh, N. Y.
Trenton Spring Mattress Co., Parker Ave., Trenton, N. J. "Excelsior," "Lace Web."
Vincent-McCall Co., Market & Howland Sts., Kenosha, Wis.
Wickwire Spencer Steel Corp., Worcester, Mass. (See pages 829 and 909.)
Wing Co., Charles, Amesbury, Mass. "Champion." (See page 1173.)
Young Industries, L. A., 9200 Russell St., Detroit, Mich.

SPRINGS, STEERING GEAR—See Checks, Steering Gear

SPRINGS, Supplementary

(See also Shock Absorbers; also Straps, Rebound)

A. C. Mfg. Co., 2251 W. Grand Ave., Chicago, Ill.
Alta—See Temco Electric Motor Co.
Auto Accessory Mfty., 34 Depot St., Canisteo, N. Y. "Eureka."
Blackledge Mfg. Co., 341 E. Ohio St., Chicago, Ill. "Velvet."
Brock Shock Absorber Co., Los Angeles, Calif.
Buckeye—See Central Brass & Fixture Co.
C-C—See Cox Brass Mfg. Co.
Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."
Cox Brass Mfg. Co., Albany, N. Y. "Coxajusto," "C-C." (See page 261.)
Coxajusto—See Cox Brass Mfg. Co.
Crescent Mfg. Co., 129 Reade St., New York, N. Y. (See page 1207.)
Curtis—See Garden City Spring Works.
Dual Mfg. Co., 1424 Nicollet Ave., Minneapolis, Minn.
Eureka—See Auto Accessories Mfty.
Falkenhainer & Co., 313 Carr St., St. Louis, Mo. "Ri-D-Z."
Featheride—See Roche Electric Mfg. Co.
Fernald Shock Absorbing Spring Suspension Co., 170 Summer St., Boston, Mass.
Garden City Spring Works, 2300 Archer Ave., Chicago, Ill. "Curtis."
Halladay Co., L. P., 501 N. Monroe St., Streator, Ill.
Hartford, Edward V., 35 Warren St., New York, N. Y. (See page 859.)
Hayes Shock Absorber Sales Co., 201 S. Seventh St., Minneapolis, Minn.
Headlight Support Co., 728 Woodward Ave., Detroit, Mich.
J. M. Shock Absorber Co., 103 W. 53d St., New York, N. Y.
Johnson—See Triple Action Spring Co.
K. T. Lever Spring Co., 332 W. 70th St., New York, N. Y.
Kim Mfg. Co., Merrimac, Mass.
McGregor—See U. S. Auto Bumper Co.
Marvel Machinery Co., 13th Ave., S. & Third St., Minneapolis, Minn. (See page 611.)

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VANADIUM VALVE and CLUTCH SPRINGS

CHROME Vanadium Spring Wire is a quality product from the ore used straight thru to the finished material. This alloy, when properly treated, combines the qualities of great strength with a high degree of ductility and resistance to fatigue. These factors enable "Vanadium" springs to stand up to their work under the severe service requirements which valve and clutch springs must meet.

Vanadium Quality Springs

NEW YORK WIRE & SPRING CO.

P. O. BOX-1043 UPTOWN BRANCH

HOBOKEN N.J.

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SPRINGS, Supplementary (Continued)

Northwestern Spring Mfg. Co.—See United Sales Co.

Noxal Co., 29 S. Clinton St., Chicago, Ill.

Premier Cushion Spring Co., 2724 E. Grand Blvd., Detroit, Mich.

Ri-D-Z—See Falkenhainer & Co.

Roche Electric Mfg. Co., 215-17 N. Division Ave., Grand Rapids, Mich. "Featheride."

Sager Co., J. H., 36-38 S. Water St., Rochester, N. Y.

St. Louis Spring Co., 3042 Locust St., St. Louis, Mo.

Stewart Mfg. Co., Inc., Oakland, Cal. (See page 1119.)

Stone Mfg. Co., 1502 Michigan Ave., Chicago, Ill. (See page 807.)

Taylor Spring & Equipment Co., 1722-26 Fairmount Ave., Philadelphia, Pa. "Teco."

Teco—See Taylor Spring & Equipment Co.

Temco Electric Motor Co., 921 Sugar St., Leipsic, O. "Alta."

Trico Products Corp., 624-28 Ellicott St., Buffalo, N. Y.

Triple Action Spring Co., 2810-12 S. Michigan Blvd., Chicago, Ill. "Johnson." (See page 1097.)

Twin Spring Co., 61 Belvidere St., Boston, Mass.

U. S. Auto Bumper Co., 3021-23 Michigan Ave., Chicago, Ill. "McGregor."

U. S. E. Corp., 7 W. 61st St., New York, N. Y.

United Sales Co., 510 Temple Ct., Minneapolis, Minn. (Sole Distributors for Northwestern Spring Mfg. Co., Minneapolis, Minn.)

United States Spring Co., 1120-26 S. Los Angeles St., Los Angeles, Cal.

Velvet—See Blackledge Mfg. Co.

SPRINGS, Supplementary, for Fords

(See also Shock Absorbers; also Straps, Rebound)

Alford—See Hoffman Mfg. Co.

Alta—See Temco Electric Motor Co.

Altorfer Bros. Co., Peoria, Ill. "Parnells."

ARG Auxiliary Spring Co., Birmingham, Ala.

B B.—See Bayne Mfg. Co.

Badger Mfg. Corp., Milwaukee, Wis. (See page 173.)

Bayne Mfg. Co., Bushnell, Ill. "B. B." (See page 725.)

Beckman Metal Products Co., 409 Superior Ave., N. W., Cleveland, O.

Blackledge Mfg. Co., 341 E. Ohio St., Chicago, Ill. "Velvet."

Buckeye De Luxe—See Central Brass & Fixture Co.

Burgess Mfg. Co., Walter S., 200 Sterling St., St. Joseph, Mich. (See page 933.)

Burpee-Johnson Co., 1910 Singleton St., Indianapolis, Ind. "Float a Ford." (See page 1019.)

Carr Mfg. Co., 910 E. Main St., Hoopestown, Ill. "O. K."

Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye De Luxe."

Champion Shock Absorber Sales Co., 913 N. Senate Ave., Indianapolis, Ind.

Comfort—See G. B. Garage & Mfg. Co.

Comfort Shock Absorber Co., Hempstead, N. Y.

Cox Brass Mfg. Co., Albany, N. Y. (See page 261.)

Defender Auto-Lock Co., 216-22 Locust St., Allegan, Mich.

Dottl Mfg. Co., 128 S. Pinckney St., Madison, Wis.

Duplex Cantilever Spring Co., 178 N. Dearborn St., Chicago, Ill. (See page 891.)

Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Sales Dept. for P. H. Webber Co., Hoopeston, Ill.) "W. & C." (See page opposite Title Page.)

Eclipse—See Kanesteo Mfg. Co.

Fidelity Mfg. Co., 921 E. 15th St., Kansas City, Mo. "Hilliard."

Flexible Rider—See R. & R. Mfg. Co.

Flexlever—See Halladay Co.

Float a Ford—See Burpee-Johnson Co.

Ford Relief Spring & Frame Supporter Co., 7 E. 42d St., New York, N. Y.

Fordezer—See Walker Mfg. Co.

G. B. Garage Mfg. Co., 299 Franklin St., Hempstead, N. Y. "Comfort."

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. "Tri-Chek." (See pages 174 and 175.)

H. & D. Co., Crawfordsville, Ind. (See page 959.)

H. L. G. Co.—See Universal Sales Co.

Halladay Co., L. P., 501 N. Monroe St., Streator, Ill. "Flexlever."

Handee—See Racine Handy Mfg. Co.

Harper Buggy Co., Columbia City, Ind.

Hartford, Edward V., 35 Warren St., New York, N. Y. (See page 859.)

Hassler Co., Robt. H., 1050-61 Naomi St., Indianapolis, Ind.

Hilliard—See Fidelity Mfg. Co.

Hoffman Mfg. Co., Andrew, 5034-38 S. State St., Chicago, Ill. "Alford."

Home Light Co., 3353 Milwaukee Ave., Chicago, Ill.

J. M. Shock Absorber Co., 108 W. 52d St., New York, N. Y.

Johnson—See Triple Action Spring Co.

K. S. Supply Co., 343 S. Dearborn St., Chicago, Ill.

Kanesteo Mfg. Co., Main St., Canisteo, N. Y. "Eclipse."

Kim Mfg. Co., Merrimac, Mass.

King Washing Machine Co., Wolcott, Ind. "Winger Ride E-Z."

Landshield Mfg. Co., 510 First Ave., West Haven, Conn.

Little Giant—See Republic Auto Parts Co.

Nash Shock Equalizer Mfg. Co., 2411 N. Illinois St., Indianapolis, Ind.

O.K.—See Carr, H. G.

Parnells—See Altorfer Bros. Co.

Pratt Mfg. Co., Wm. E., 35 W. Lake St., Chicago, Ill.

R. & R. Mfg. Co., 208 S. La Salle St., Chicago, Ill. "Flexible Rider."

Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."

Republic Auto Parts Co., 31-35 Tenth St., Long Island City, N. Y. "Ridewell," "Little Giant."

Rex—See Volute Spring Shock Absorber Co.

Richards-Wilcox Mfg. Co., Third St. & C. B & Q. R. R. Tracks, Aurora, Ill.

Ridewell—See Republic Auto Parts Co.

Sager Co., J. H., 36-38 S. Water St., Rochester.

Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. "W. X." (See page 507.)

Steelbilt—See Walker Mfg. Co.

Stone Mfg. Co., 1502 Michigan Ave., Chicago, Ill. (See page 807.)

Taylor Spring & Equipment Co., 1722-26 Fairmount Ave., Philadelphia, Pa. "Teco."

Teco—See Taylor Spring & Equipment Co.

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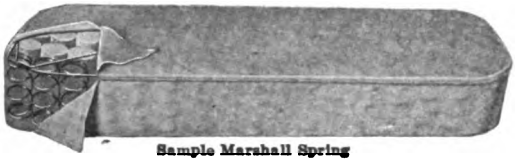
Automobile Cushion and Back Springs

THIRTY DIFFERENT STYLES TO SELECT FROM

Compound Double Deck Deluxe, Single Deck Deluxe, Marshall Springs, Automatic Type.

Valve Springs
Brake Springs
Hose Clamps



Sample Marshall Spring

Springs for closed bodies, Pleasure Cars, Tractors, Trucks, all Conveyances.

Small Springs of Every Description

Superior Double Deck Type, Liberty Type and others.
State your needs, we can fill the bill to the letter.

D'ARCY SPRING CO., Kalamazoo, Mich.

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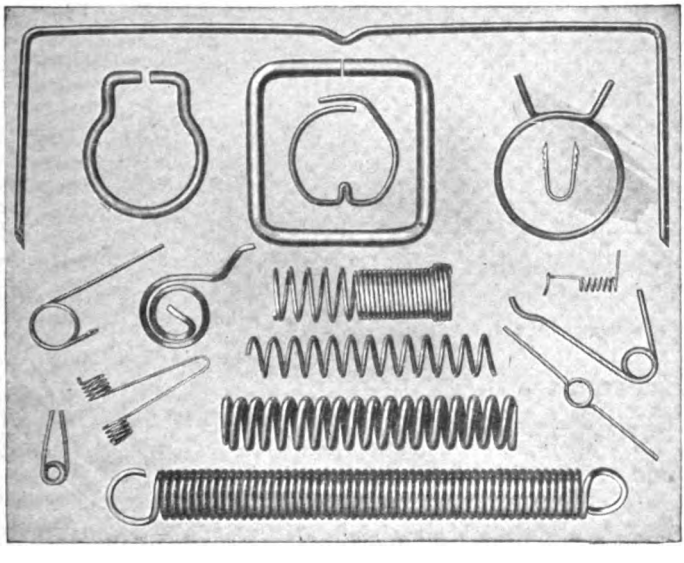
For Every Automotive Purpose



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Our Engineering Department is solving new and different spring problems every day—write us your requirements.

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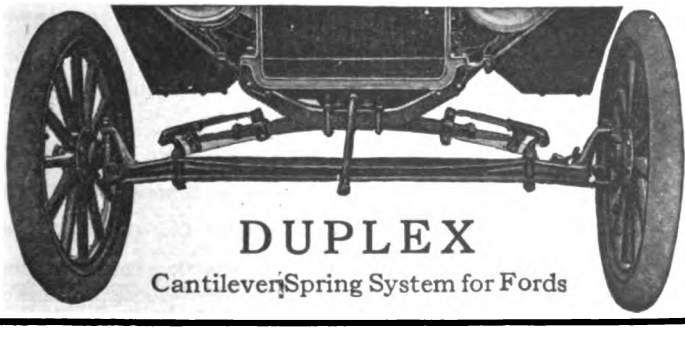
16612 Waterloo Road
Cleveland Ohio

DEMAND HEAVIER THAN EVER!



Big business growing bigger. Ford owners taking better care of cars—insist on Duplex Cantilever System. Safest. Most satisfactory. Positive protection against rough road vibration. Only Cantilever System for Fords. Easily installed. Fully guaranteed. Write quick for prices and profitable dealer's proposition.

Duplex Cantilever Spring Co.
180 N. Dearborn St., Chicago, Ill.

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SPRINGS, Supplementary, for Fords (Continued)

Temco Electric Motor Co., 921 Sugar St., Leipsic, O. "Alta."

Tri-Chek—See Gemco Mfg. Co.

Triple Action Spring Co., 2810-12 S. Michigan Blvd., Chicago, Ill. "Johnson." (See page 1097.)

Triple Action Spring Co. of New York, 549 W. 59th St., New York, N. Y.

Twin Spring Co., 61 Belvidere St., Boston, Mass.

Universal Sales Co., Odd Fellows Bldg., Indianapolis, Ind. (Sole Distributors for H. L. G. Co., Indianapolis, Ind.)

Universal Shock Absorber & Mfg. Co., 2525 Milwaukee Ave., Chicago, Ill.

U. S. E. Corp., 6-8 62d St., New York, N. Y.

Velvet—See Blackledge Mfg. Co.

Volute Spring Shock Absorber Co., Mt. Vernon, N. Y. "Rex."

W-X—See Star Specialty Mfg. Co.

W. & C.—See Eckhouse & Co.

Walker Mfg. Co., Hamilton & Michigan Sts., Racine, Wis. "Fordexer," "Steelbilt."

Webber & Co., P. H.—See Eckhouse & Co.

Whitehouse Mfg. Co., 42 Elm St., Newark, N. J. (See page 637.)

Wilcox Pressed Steel Co., 1713-35 Armitage Ave., Chicago, Ill.

Winger Ride E-Z—See King Washing Machine Co.

SPRINGS, TIRE CHAIN TIGHTENING—See Tighteners, Tire Chain

SPRINGS, Tow Rope

Zimmerman Mfg. Co., 247-51 W. Lincoln Way, Valparaiso, Ind.

SPRINGS, UPHOLSTERY—See Springs, Seat

SPRINGS, VALVE—See Springs, Machinery

SPRINGS, VALVE, FOR FORDS — See Springs, Engine Valve

SPROCKETS, Machined

(For Sprocket Blanks—See Castings; also Forgings; also Gears, Blank)

Baldwin Chain & Mfg. Co., Worcester, Mass. (See page 235.)

Boston Gear Works (Norfolk Downs), Quincy, Mass.

Bultman Co., F. H., 10271 Berea Rd., Cleveland, O.

Crofoot Gear Works, Hyde Park Ave. at Readville, Boston, Mass. (See page 641.)

Cullman Wheel Co., 1356 Altgeld St., Chicago, Ill. (See page 1155.)

De Voe Co., H. S., 411 N. Plum St., Muncie, Ind.

Forg Mfg. Co., Peter, 50 Park St., Somerville, Mass.

Grant Gear Works, 151 Pearl St., Boston, Mass.

Link-Belt Co., Indianapolis, Ind. (See page 235.)

Meisel Press Mfg. Co., 945 Dorchester Ave., Boston, Mass. (See page 488.)

Penmaid—See Pennsylvania Gear & Machine Co.

Pennsylvania Gear & Machine Co., E. Tioga, Weikel & Janney Sts., Philadelphia, Pa. "Penmaid." (See page 649.)

Savage Arms Corp., Sharon, Pa.

Sier-Bath Co., 143 W. 54th St., New York, N. Y. (See page 1093.)

Standard Gear Co., 5930 Commonwealth Ave., Detroit, Mich.

SPROCKETS, Motorcycle

Hydraulic Pressed Steel Co., of the Hydraulic Steel Co., Cleveland, O. (See page 439.)

STABILIZERS, Airplane

Brown & Co., S. N., 111 Commercial St., Dayton, O.

Martin Aerodynamic Stabilizer Co., 280 Madison Ave., New York, N. Y.

Martin Aeroplane Factory, Elyria, O.

Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.

STAKE POCKETS—See Pockets, Truck Stake

STAMPINGS and PRESSINGS, Metal

A. B. & B. Sheet Metal Works, 3300-02 Fond du Lac Ave., Milwaukee, Wis.

A. C. R.—See American Cloth Register Co.

Ability Tool & Mfg. Co., 4100 Lincoln Ave., Chicago, Ill.

Acklin Stamping Co., Toledo, O. (See page 899.)

Acme Die & Stamping Co., 505 Chartiers Ave., McKees Rocks, Pa.

Acme Motor Parts Corp., Milwaukee, Wis. (See page 303.)

Adell Mfg. Co., Orange, Mass.

Advance Engineering Co., 6539 Metta Ave., Cleveland, O.

Advance Machinery Co., Van Wert, O.

Advance Tool Works, 2300 Warren Ave., Chicago, Ill.

Ajax Auto Parts Co.—See Brandenburg Bros. & Eccleston.

Akins Machine Co., Wm. C., 1 Gleason Pl., Rochester, N. Y.

Akron-Selle Co., High & Chestnut Sts., Akron, O.

Allen & Co., S. L., Fifth St. & Glenwood Ave., Philadelphia, Pa.

Alloy Metal Stamping & Specialty Co., 444 N. 13th St., Philadelphia, Pa.

Alloy Parts Mfg. Co., Canton, O.

Alsteel Mfg. Co., 7-9 Carlyle St., Battle Creek, Mich. (See page 351.)

Aluminum Co. of America, Oliver Bldg., Pittsburgh, Pa.

Aluminum Goods Mfg. Co., 15th & Franklin Sts., Manitowoc, Wis.

Amco—See Shaw Co.

American Automatic Products Corp., 365 N. Sangamon St., Chicago, Ill.

American Brass Co., Waterbury, Conn. (See page 165.)

American Brass Novelty Co., Grand Haven, Mich.

American Brass Products Co., Pottstown, Pa.

American Cloth Register Co., 189 Main St., New Britain, Conn. "A. C. R."

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Pressed Steel Parts

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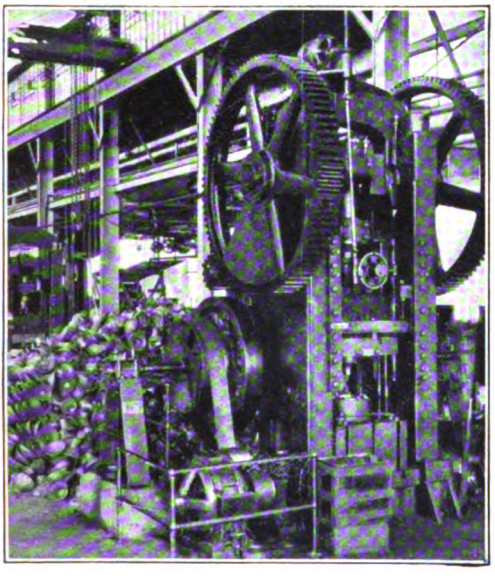

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BRAKE DRUMS
HUB CAPS
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TORQUE ARMS
BRAKE DISCS
AXLE PARTS
CLUTCH CONES
CLUTCH COLLARS
CLUTCH SLEEVES
FRAME BRACES
BRACKETS
WHEEL HUBS
UNIVERSAL JOINT
AND REAR AXLE HOUSINGS

Motor Wheel PRODUCTS

HERE in this pressed steel plant, which is one of the most modern and complete in the country, are manufactured all of the hubs, drums and flanges for the divisions of the Motor Wheel Corporation. Yet our capacity is so large that we still make pressed steel parts for other manufacturers and should like to figure with you on any of your requirements.

MOTOR WHEEL CORPORATION, LANSING, MICH.
Gier Pressed Steel Plant

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Four Million Wheels a Year—*from standing tree to finished product*

WITHIN the confines of our organization, 4,000 sets of wood wheels for motor cars and trucks are made each day—of wood grown in our own forests, cut and seasoned in our own mills and of steel pressed and fashioned in our own plant.

The units of the Motor Wheel Corporation are as follows:

Gier Pressed Steel Plant
Lansing, Michigan

Prudden Wheel Plant
Lansing, Michigan

Auto Wheel Plant
Lansing, Michigan

Weis and Lesh Plants
Memphis and Jackson, Tennessee
Monroe, Louisiana
Light, Arkansas
Saw Mills at Other Points

The men directly responsible for the organizing and operating of the Motor Wheel Corporation are H. F. Harper, President and General Manager; W. H. Newbrough, Chairman of Board of Directors; B. S. Gier, First Vice President and Treasurer; D. L. Porter, Vice President; W. C. Brock, Vice President; and C. C. Carlton, Secretary, who with O. A. Jenison, J. B. Siegfried and Chas. W. Nichols constitute the Board of Directors. Mr. Siegfried is General Sales Manager.

Motor Wheel PRODUCTS

Motor Wheel Corporation
Manufacturers
Motor Vehicle Wheels Complete
Metal Stampings, Steel Products

LANSING, MICH.

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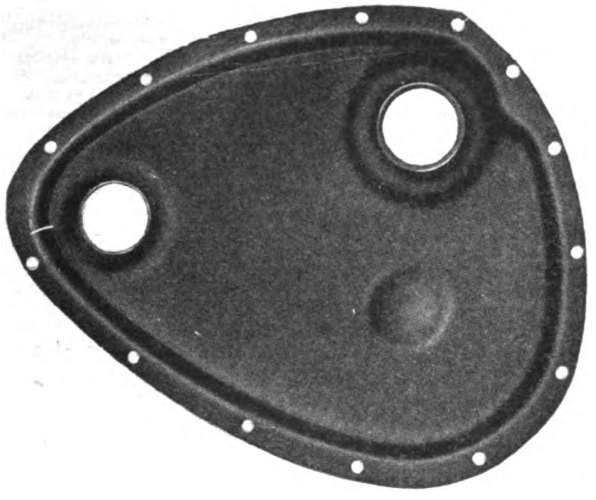

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DEEP DRAWN WORK *for*

Passenger Cars, Tractors, Trucks

Electric Apparatus and Fixtures

Machine Tools **Vitreous Enameling**

Hub Flanges, Brake Drums, Step Hangers, Clutch Cones, Housing and Gear Covers, Reflectors, Table Tops, Oil Pans.
EQUIPPED TO ASSEMBLE AND PARKER PROCESS Engine Bases, Oil Pans, Gear Covers and Special Units.

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STAMPINGS and PRESSINGS, Metal (Continued)

American Nut & Bolt Fastener Co., 3 Ontario St., Pittsburg, Pa.

American Pulley Co., 4200 Wissahickon Ave., Philadelphia, Pa.

American Safety Lamp & Mine Supply Co., 1300 Capouse Ave., Scranton, Pa.

American Tube Co., 3704 S. Rockwell St., Chicago, Ill.

American Tube & Stamping Co., 411 Hancock Ave., Bridgeport, Conn.

Ansonia Mfg. Co., Ansonia, Conn.

Arlington Machine Co., 52-56 Broome St., Newark, N. J.

Arrow Tool Co., 220 Cannon St., Bridgeport, Conn.

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (New England and New York Distributors for Standard Stampings.) (See page 275.)

Ashley Machine Works, 721 University Ave., Rochester, N. Y.

Atlas Mfg. Co., 125 Water St., New Haven, Conn.

Auto Parts Mfg. Co., 1815 Trombly Ave., Detroit, Mich.

Auto Products Co., Station H, Cincinnati, O. (See page 1193.)

Automotive Sheet Metal Co., Factory St. & Grand Trunk R. R., Kalamazoo, Mich.

B. J. Stamping Co., 1435 Dorr St., Toledo, O.

B. & W. Tool & Die Co., 102 St. Clair Ave., N. W., Cleveland, O.

Badger Corrugating Co., 214-16 S. Second St., La Crosse, Wis.

Barcy-Nicholson Co., 2801-19 W. Fort St., Detroit, Mich.

Barnes Co., Wallace, Bristol, Conn. (See page 887.)

Bassick Co., Bridgeport, Conn. (See page 333.)

Baum's Metal Specialties Co., 1022 Wyandotte St., Kansas City, Mo.

Bay State Stamping Co., 330 Chandler St., Worcester, Mass.

Beaver Machine & Tool Co., 625-43 N. Third St., Newark, N. J.

Becco—See Michigan Motor Specialties Co.

Benjamin Electric Mfg. Co., 806 W. Washington Blvd., Chicago, Ill. (See pages 181 and 517.)

Bersted Forming Tool Co., 765 Mather St., Chicago, Ill.

Betco—See Blodgett Engineering & Tool Co.

Bettcher Stamping & Mfg. Co., 3106 W. 61st St., Cleveland, O. (See page 361.)

Bilton Machine Tool Co., Bridgeport, Conn. (See page 613.)

Blair Tool & Machine Works, 521 Greenwich St., New York, N. Y.

Blickman, I., 479 First Ave., New York, N. Y.

Blickman, S., 199 Lafayette St., New York, N. Y. (See page 751.)

Blodgett Engineering & Tool Co., 14th & Dalzelle Sts. (Roosevelt Park), Detroit, Mich. "Betco."

Board, Edward, Seventh & Wood Sts., Philadelphia, Pa.

Bossert Corp., Utica, N. Y. (See page 897.)

Boston Pressed Metal Co., 171-73 Union St., Worcester, Mass.

Boston Tool & Mfg. Co., 262 Dover St., Boston, Mass.

Bowen Products Corp., Auburn, N. Y. (See page 331.)

Bowen Products Corp. (Winkley Division), 2760 W. Warren Ave., Detroit, Mich.

Brandenburg Bros. & Eccleston, 1112 S. Michigan Ave., Chicago, Ill. (Sole Distributors for Ajax Auto Parts Co., Racine, Wis.)

Brasco Mfg. Co., 5025-35 S. Wabash Ave., Chicago, Ill.

Brewer Tichener Corp., Cortland, N. Y. (See page 567.)

Bridgeport Silverware Mfg. Corp., 65 Holland St., Bridgeport, Conn.

Brill Co., J. G., 62nd St. & Woodland Ave., Philadelphia, Pa.

Bristol Industries, Inc., Woolworth Bldg., New York, N. Y. (See page 351.)

Browne Mfg. Co., W. G., Kingston, N. Y.

Budd-Ranney Engineering Co., 44 E. Chestnut St., Columbus, O.

Budd-Ranney Engineering Co., Columbus, O.

Buffalo Pressed Steel Co., 800 Keasington Ave., Buffalo, N. Y. (See page 655.)

Burgess-Norton Mfg. Co., Geneva, Ill. (See page 735.)

C. A. S. Engineering Co., 4210 Woodward Ave., Detroit, Mich. (Sole Distributors for Regenstein-Veeder Co., Chicago, Ill.

Candler Radiator Co., 1084-86 Jefferson Ave., Detroit, Mich. (See page 841.)

Canton Metal Ceiling Co., 3100 Harrison Ave., Canton, O.

Carde Stamping & Tool Co., West Side, Saginaw, Mich.

Carll Sons, Chas. W., Trenton, N. J.

Cary Spring Works, 240-42 W. 29th St., New York, N. Y.

Case Mfg. Co., 214-16 N. Mechanic St., Jackson, Mich.

Cassady-Fairbank Mfg. Co., 6126 S. La Salle St., Chicago, Ill.

Central Machine Works, 1911 N. 12th St., St. Louis, Mo.

Central Machine Works, 19 Church St., Worcester, Mass. (See page 1021.)

Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 345.)

Chicago Die & Specialty Co., 553 W. Monroe St., Chicago, Ill. (See page 1163.)

Chicago Fuse Mfg. Co., Chicago, Ill. (See page 615.)

Chicago Tool Co., 542 W. Jackson Blvd., Chicago, Ill.

Circle Stamping & Mfg. Co., 241-45 Cortland St., Belleville, N. J.

City Iron Works & Machine Co., 520 S. Delaware Ave., Philadelphia, Pa.

Clark-Cadle-Harmon Corp., 1139 University Ave., Rochester N. Y.

Clayton & Lambert Mfg. Co., Detroit, Mich. (See page 981.)

Cleveland Heater Co., 1900 W. 112th St., Cleveland, O.

Cleveland Metal Stamping Co., 3110 Payne Ave., Cleveland, O.

Cleveland National Machine Co., 1366 W. 70th St., Cleveland, O.

Cleveland Wrought Products Co., W. 58th St., south of Dennison Ave., Cleveland, O. (See page 875.)

Cochran Piston Corp., Detroit, Mich. (See page 735.)

Coin Device & Signal Co., 409 Eighth Ave., New York, N. Y.

Colonial Stamping Co., Brill St. & Morris Canal, Newark, N. J.

Colson Co., Elyria, O.

Columbia Metal Stamping Co., 1540 E. 49th St., Cleveland, O.

Cooney-Dunn Co., 73 Grand St., New York, N.Y.

Cornwall Mfg. Co., Cleveland, O. (See page 951.)

Crosby Co., Buffalo, N. Y. (See page 899.)

Crowe Name Plate & Engraving Co., 1749 Grace St., Chicago, Ill. (See page 709.)

Custer Pressed Steel Wheel Co., Bradford, Pa.

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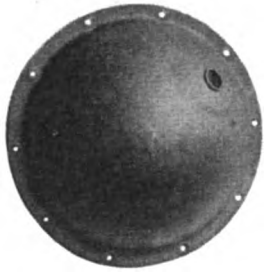

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D. & D. Machine & Tool Co., 16-20 Jefferson Ave., Elizabeth, N. J.

Dahlstrom Metallic Door Co., E. Second & Buffalo Sts., Jamestown, N. Y.

Dall Steel Products Co., Hosmer & Main Sts., Lansing, Mich.

Deep Drawn Metal Corp., 195 Plymouth St., Brooklyn, N. Y.

Delphie Specialty Mfg. Co., 435-37 E. Willis Ave., Detroit, Mich.

Derby Coppersmithing & Sheet Metal Contracting Co., Derby, Conn.

De Sta Co—See Detroit Stamping Co.

Detroit Auto Specialty Corp., 6209 Greenwood Ave., Detroit, Mich.

Detroit Pressed Steel Co., Detroit, Mich. (See page 1203.)

Detroit Stamping Co., 3445-59 W. Fort St., Detroit, Mich. "De Sta Co."

Dewes Co., A., 199 Lafayette St., New York, N. Y. (See page 523.)

Diamond Stamping Works Co., 5400 Windsor Ave., Cleveland, O.

Die Products Mfg. Co., 11 St. Marys St., Dayton, O.

Disston & Sons, Henry, (Tacony), Philadelphia, Pa.

Dorchester Machine & Tool Works, 70 Freeport St., Boston, Mass.

Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.

Dover, George W., Eddy St. & Thurbers Ave., Providence, R. I.

Duplex Machine Co., 93 Lafayette St., Newark, N. J.

Efemco—See Foster, Merriam & Co.

Eisler Mfg. Co., 15 Elser Terrace, Rochester, N. Y.

Elsener Mfg. Co., C. C., 15423 Center St., Harvey, Ill.

Elyria Steel Products Co., Elyria, O.

Empire Art Metal Co., College Point, N. Y.

Empire Machine & Stamping Co., Buffalo, N. Y.

England Mfg. Co., 5914 Federal Ave., Detroit, Mich.

Enterprise Brass & Plating Co., Sixth & Baymiller Sts., Cincinnati, O.

Enterprise Mfg. Co., Bowery & Center Sts., Akron, O.

Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for McCord Stampings.) (See page 125.)

Eveready Mfg. Co., 86 Boylston St., Boston, Mass.

Excelsior Tool & Mfg. Co., 96-98 Fulton St., New York, N. Y.

Faries Mfg. Co., 624 N. Union St., Decatur, Ill.

Federal Equipment & Supply Co., 298 Broadway, New York, N. Y.

Federal Pressed Steel Co., 52 Keefe Ave., Milwaukee, Wis. (See page 901.)

Fernald Mfg. Co., North East, Pa.

Ferro Stamping & Mfg. Co., Detroit, Mich. (See page 588.)

Fischer Spring Co., Chas., 473 Kent Ave., Brooklyn, N. Y.

Flour City Ornamental Iron Co., Minneapolis, Minn.

Forg Mfg. Co., Peter, 50 Park St., Somerville, Mass.

Forsyth Bros. Co., Harvey, Ill. (See page 1067.)

Forsyth Metal Goods Co., East Aurora, N. Y.

Fort Dearborn Mfg. Co., First St., Rock Falls, Ill.

Foster, Merriam & Co., Meriden, Conn. "Efemco," "Ful-A-Pep." (See page 821.)

Fostoria Pressed Steel Co., Fostoria, O. (See page 993.)

Fox Co., Gustave, 411-13 Race St., Cincinnati, O.

Frankford Machine Co., 4099 Frankford St., Philadelphia, Pa.

Ful-A-Pep—See Foster, Merriam & Co.

Galesburg-Coulter Disc Co., Galesburg, Ill.

Gasket Supply Co., 1728 Ludlow St., Philadelphia, Pa. (See page 447.)

Gem Mfg. Co., Goebel & Fulton Sts., Pittsburgh, Pa.

Gem Stamped Steel Co., 16 Beach St., Everett, Mass.

General Metal Crafts Co., 2127 Filden St., Chicago, Ill.

General Metals Co., 6189 Greenwood Ave., Detroit, Mich.

General Stamping & Mfg. Works, 1652 W. Belmont Ave., Chicago, Ill.

Geometric Stamping Co., Cleveland, O.

Geuder, Paeschke & Frey Co., 1365-1700 St. Paul Ave., Milwaukee, Wis. (See page 949.)

Globe Machine & Stamping Co., 1200-50 W. 76th St., Cleveland, O. (See page 1049.)

Grand Rapids Brass Co., 90 Scribner Ave., N. W., Grand Rapids, Mich.

Great Lakes Pressed Steel Corp., 1410 Niagara St., Buffalo, N. Y.

Greer, Frederic, 525 W. Van Buren St., Chicago, Ill.

Greist Mfg. Co., New Haven, Conn. (See page 1117.)

Guyot Bros., Attleboro, Mass.

H. K. Metal Products Co., 60 Grand St., New York, N. Y.

H. & D. Co., Crawfordsville, Ind. (See page 959.)

Hadden Messinger Corp., 214 Taaffe Pl., Brooklyn, N. Y.

Hagstrom Model & Tool Works, 1623 Grand Ave., Kansas City, Mo.

Hale-Kilburn Corp., 1800 Lehigh Ave., Philadelphia, Pa.

Hammarlund Mfg. Co., 144-46 W. 18th St., New York, N. Y.

Hanney Stamping Works, 3102 Woodbridge St., Detroit, Mich.

Hardy Mfg. Co., Pendleton, Ind. (See page 403.)

Harker Mfg. Co., 121-23 W. Third St., Cincinnati, O.

Harry Bros. Mfg. Co., 1302 E. Woodbridge St., Detroit, Mich.

Hart Machine & Tool Co., 364 Atlantic Ave., Boston, Mass.

Harvey Mfg. Co., 1862 State St., Bridgeport, Conn.

Harwich Stamping Co., Miller Rd. & S. Thayer St., Detroit, Mich.

Hastings Mfg. Co., 36 Mill St., Hastings, Mich. (See page 567.)

Hayes-Ionia Co., Seventh St. & Muskegon Ave., Grand Rapids, Mich.

Hayes Mfg. Co., 4525 Maybury Grand Ave., Detroit, Mich.

Henry Mfg. Co., G. J., 3263-70 W. Grand Ave., Chicago, Ill.

Hero Mfg. Co., 23rd & Westmoreland Sts., Philadelphia, Pa.

Higgin Mfg. Co., Newport, Ky.

Higginson-Gibson Mfg. Co., 76 Atherton St. (Jamaica Plain), Boston, Mass.

Hill Co., Geo. Q., 32-34 Dorchester Ave., Boston, Mass.

Hoeft & Co., 400 N. Ashland Ave., Chicago, Ill.

Hotchkiss Metal Form Co., 16 Jarvis St., Binghamton, N. Y. (See page 345.)

Howes Co., S. M., 42 Union St., Boston, Mass.

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Hub Engineering & Machine Co., Bound Brook, N. J.

Hubbard Spring Mfg. Co., Pontiac, Mich. (See page 957.)

Hydraulic Pressed Steel Co., of the Hydraulic Steel Co., Cleveland, O. (See page 439.)

Hyman & Co., Henry, 476 Broadway, New York, N. Y.

Iles Mfg. Co., E. W., Shelton, Conn.

Indestructible Wheel Co., Lebanon, Ind.

Indianapolis Pressed Steel Co., Rural St. & Belt R. R., Indianapolis, Ind.

Industrial Electric Mfg. Co., 139 Beaubien St., Detroit, Mich.

Ingram-Richardson Mfg. Co., Beaver Falls, Pa.

International Auto Parts Co., 16th & Wood Sts., Philadelphia, Pa.

International Metal Mfg. Co., Wayne Ave. & Berkley St., Philadelphia, Pa.

International Metal Stamping Co., Artillery & Muster Aves., Detroit, Mich.

International Steel Products Co., Hartford, Wis.

Ireland & Matthews Mfg Co., Beard & Chatfield Sts., Detroit, Mich.

Iroquois Tool & Stamping Co., 909-15 Genesee St., Buffalo, N. Y.

Jambor Mfg. Co., Milwaukee, Wis. (See page 965.)

Johnson Mfg. Co., 103 N. Front St., Philadelphia, Pa.

Kales Stamping Co., 1663 W. Lafayette Blvd., Detroit, Mich. (See page 641.)

Kamco Corp., 34 Barclay St., New York, N. Y.

Kanters Stamping & Mfg. Co., Shaw Ave. & 133rd St., Cleveland, O.

Keeler Brass Co., 251-71 Godfrey Ave., Grand Rapids, Mich.

Keyless Lock Co., 1401 Newman St., Indianapolis, Ind.

Keystone Production & Mfg. Co., 1835 W. 22d St., Chicago, Ill.

Kickhaefer Mfg. Co., Dept. A., 189-201 Oregon St., Milwaukee, Wis. (See page 901.)

Kirk & Blum, 2846 Spring Grove Ave., Cincinnati, O.

Kitchen Specialty Mfg. Co., Elm & Reed Sts., Reading, Pa.

Klein, Adolph, 174 Center St., New York, N. Y.

Klopping, A. C., 1678 Norwood Ave., Toledo, O.

Knowles Tool Mfg. Co., 125 N. Webster St., Dayton, O.

Koehler Mfg. Co., Marlboro, Mass.

Konigslow Mfg. Co., Otto, 3501 Perkins Ave., Cleveland, O.

Krebs Mfg. Co., 341 E. Ohio St., Chicago, Ill.

L. & L. Mfg. Co., 134 High St., Newark, N. J.

La Crosse Hinge & Lock Co., 907 S. Front St., La Crosse, Wis.

Lansing Stamping & Tool Co., Lansing, Mich. (See page 353.)

Larson Tool & Stamping Co., Olive St., Attleboro, Mass.

Lawson Co., F. H., Dept D, Cincinnati, O. (See page 327.)

Lazarides Mfg. Co., 56 Beekman St., New York, N. Y.

Lehigh Engineering Co., Rogersford, Pa.

Levy, Benj., 355 W. Broadway, New York, N. Y.

Liberty Metal Spinning Works, 180 Centre St., New York, N. Y.

Liberty Tool & Gauge Works, 338 Bernon St., Woonsocket, R. I.

Lidseen, 832-40 S. Central Ave., Chicago, Ill. (See page 189.)

Lima Sheet Metal Products Co., 308 E. Wayne St., Lima, O.

Lindholm Metal Stamping Co., 107-15 Erie St., Camden, N. J.

Light Tool & Stamping Co., 1783 E. 37th St., Cleveland, O.

Lightwell Steel Sash Co., Newport, Del.

Lough Bros., 90 West St., New York, N. Y. (Dealers.) (See page 207.)

Lynn Machine & Screw Co., 496 Washington St., Lynn, Mass.

McCall Machine Works, 574 Lyell Ave., Rochester, N. Y.

McCord & Co., 122 S. Michigan Ave., Chicago, Ill.

McCully, R. P. & C. H., 331-35 Van Buren St., Brooklyn, N. Y.

McCord Mfg. Co., Detroit, Mich. (See pages 784 and 785.)

McDowell Mfg. Co., Millvale Sta., Pittsburgh, Pa.

McKinney Mfg. Co., Liverpool & Metropolitan Sts., Pittsburgh, Pa.

Maforco—See Market Forge Co.

Mail O Meter Co., 3469 E. Jefferson St., Detroit, Mich.

Mann Corp., Kankakee, Ill.

Mansfield Steel Corp., 288 E. Milwaukee Ave., Detroit, Mich.

Mantle & Co., 1907 Park Ave., New York, N. Y.

Market Forge Co., Garvey St. & Blvd., Everett, Mass. "Maforco."

Mars Mfg. Co., 13th St. & Second Ave. (S. Brooklyn), Brooklyn, N. Y.

Maryland Metal Products Co., Hagerstown, Md.

Massachusetts Machine Shop, 817 Albany St., Boston, Mass. (See page 1061.)

Mattatuck Mfg. Co., 100 Southmayd St., Waterbury, Conn.

Matthews Mfg. Co., 104 Gold St., Worcester, Mass.

Matthews Mfg. Co., H. A., Seymour, Conn.

Mayer Co., Geo. J., 36 S. Meridian St., Indianapolis, Ind.

Merwin Mfg. Co., 310-20 E. 19th St., Erie, Pa.

Metal Auto Parts Co., Chase & Henry Sts., Indianapolis, Ind.

Metal Parts Mfg. Co., 1034 E. 152nd St., Cleveland, O.

Metal Products Mfg. Co., 241-43 W. 23rd St., New York, N. Y.

Metal Specialty Co., 1529-33 W. Sixth St., Cincinnati, O.

Michigan Crown Fender Co., N. Huron St., Ypsilanti, Mich.

Michigan Forge & Tool Co., 7360 Richmond Ave., Detroit, Mich.

Michigan Metal Spinning Mfg. Co., 2130-34 E. Woodbridge St., Detroit, Mich.

Michigan Motor Specialties Co., 120 Mt. Elliott Ave., Detroit, Mich. "Becco."

Michigan Pressed Steel Co., 126 S. Artillery Ave., Detroit, Mich.

Michigan Stamping Co., 11631 Mack Ave., Detroit, Mich.

Miller Tool & Mfg. Co., 1725 16th St., Detroit, Mich. (See page 1167.)

Milwaukee Metal Working Co., 332-38 Clinton St., Milwaukee, Wis.

Mirrorscope Co., E. 168th St. & Waterloo Rd., Cleveland, O.

Mitchell & Son, G. F., 6501 Cedar Ave., Cleveland, O.

Modern Tool & Mfg. Co., 119 Opera Pl., Cincinnati, O.

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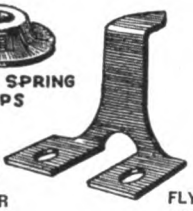
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Moline Pressed Steel Co., Fifth St., East Moline, Ill.
Monarch Stamping Co., Chappaqua, N. Y.
Monarch Tool & Mfg. Co., 118-22 Opera Pl., Cincinnati, O.
Moore & Co., 301 W. Grand Ave., Chicago, Ill.
Morrison & Sons, F., 1320 W. 11th St., Cleveland, O. (See page 951.)
Morrison Steel Products Co., 26-28 E. North St., Buffalo, N. Y.
Morton Mfg. Co., 5133-39 W. Lake St., Chicago, Ill. (See page 1023.)
Mossberg Co., Frank, Attleboro, Mass.
Motor Products Corp., 11803 Mack Ave., Detroit, Mich. (See page 857.)
Motor Wheel Corp. (Gier Pressed Steel Plant), Lansing, Mich. (See pages 893 and 894.)
Motors Metal Mfg. Co., 5936 Milford Ave., Detroit, Mich.
Motor Parts Machine Co., 645-49 S. Pierce St., Milwaukee, Wis.
Mt. Vernon Co., Mt. Vernon, N. Y.
Mullins Body Corp., 182 Franklin Ave., Salem, O.
Murray Auto Parts Mfg. Co., Atlanta, Ga.
Murray Mfg. Co., J. W., 571 Clay Ave., Detroit, Mich.
Murray Mfg. Co., J. W., Clay & St. Aubin Aves., Detroit, Mich.
National Engineering Co., Broad & Chestnut Sts., Philadelphia, Pa.
National Metal Stamping & Mfg. Co., Mulberry & Murray Sts., Newark, N. J.
National Metalware Co., 95 S. Fifth St., Brooklyn, N. Y.
National Stamping & Electric Works, 410-26 Clinton St., Chicago, Ill.
National Steel Products Co., 1610 Crystal Ave., Kansas City, Mo. (See page 501.)
Neevel Mfg. Co., 1409 Kansas Ave., Kansas City, Mo.
Nelson Mfg. Co., A., 2700 Southport Ave., Ave., Chicago, Ill. (See page 1135.)
Nelson Tool Co., 782 E. 142d St., New York, N. Y.
New Britain Machine Co., Chestnut St., New Britain, Conn.
New England Pressed Steel Co., Washington Ave., Natick, Mass.
Newton Mfg. Co., Church St., Plainville, Conn.
Niagara Brass Mfg. Co., Lockport, N. Y.
Niagara Falls Metal Stamping Works, 235-47 Tenth St., Niagara Falls, N. Y.
Niagara Machine Works, 1387 Niagara St., Buffalo, N. Y.
North Star Specialty Co., 1834 University Ave., St. Paul, Minn.
Oakes Co., Indianapolis, Ind. (See page 405.)
Oliver Metal Stamping Co., 217-23 W. Illinois St., Chicago, Ill.
Pandolfo Mfg. Co., St. Cloud, Minn. (See page 157.)
Parish Mfg. Co., Reading, Pa. (See page 431.)
Parish & Bingham Corporation, Cleveland, O. (See pages 427 and 430.)
Parker White-Metal & Machine Co., 23rd & Railroad Sts., Erie, Pa.
Parsons Mfg. Co., 5301-47 Bellevue Ave., Detroit, Mich.
Patton-MacGuyer Co., 31 Mathewson St., Providence, R. I.
Pawtucket Mfg. Co., 327 Pine St., Pawtucket, R. I.
Pearce Co., Fred'k., 18-20 Rose St., New York, N. Y.
Peerblow Mfg. Co., Leetsdale, Pa.
Perfect Window Regulator Co., 20 Exchange Pl., New York, N. Y. (See page 801.)
Perfection Metal Products Co., College Point, N. Y.
Pheoll Mfg. Co., 5750 W. Roosevelt Rd., Chicago, Ill.
Phillips & Co., H., 904-10 Evans St., Cincinnati, O.
Phoenix Mfg. Co., Loraine & Grand River Aves., Detroit, Mich. (See page 1127.)
Plum & Little, 30 N. Water St., Rochester, N. Y.
Pollak Tool & Stamping Co., Joseph, 81-85 Freeport St., Boston, Mass.
Powell Pressed Steel Co., Hubbard, O. (See page 903.)
Pratt Chuck Co., Frankfort, N. Y.
Presteel Co., Grafton, O.
Pressed Steel Car Co., Fifth Ave. & Wood St., Pittsburgh, Pa.
Pressed Steel Co., Luzerne St., Wilkes-Barre, Pa. (See page 903.)
Producers' Machine & Specialty Corp., 61-65 Elizabeth St., Rochester, N. Y.
Production Engineering Co., 212 Centre St., New York, N. Y.
Progressive Tool Mfg. Co., Fifth St., Beloit, Wis.
Quinsigamond Pressed Steel Co., 62 Jackson St., Worcester, Mass.
R. P. K. Pressed Metal Co., Bridgeport, Conn.
Raymond Engineering Corp., 307 Lafayette St., New York, N. Y.
Recording Devices Co., 554 W. Fifth St., Dayton, O.
Reed & Prince Mfg. Co., Duncan Ave., Worcester, Mass.
Regenstein-Veeder Co.—See C. A. S. Engineering Co.
Reliance Metal Spinning & Stamping Co., 160 John St. Brooklyn, N. Y.
Reynolds Engineering Co., First St. & Third Ave., Moline, Ill.
Rochester Pressed Steel Co., 35-37 Ford St., Rochester, N. Y.
Royal Machine & Foundry Co., 388-90 Division St., Oshkosh, Wis. (See page 503.)
S. A. Machine Co., 2114 E. Woodbridge St., Detroit, Mich.
S. & H. Machine & Tool Co., 23 Elizabeth St., Albany, N. Y.
S. & Y. Co., 55-57 Governor St., Springfield, Mass.
Saginaw Stamping & Tool Co., ft. Williamson St., Saginaw, Mich.
Savage Arms Corp., Sharon, Pa.
Saxon Mfg. Co., 1034-40 Grand Ave., Toledo, O.
Schatz Mfg. Co., 17 Fairview Ave., Poughkeepsie, N. Y.
Schroeder Bros. Mfg. Co., 102 Brook St., Torington, Conn.
Scott & Fetzer Machine Co., Locust Ave., Cleveland, O.
Scovill Mfg. Co., Waterbury, Conn. (See page 845.)
Seavey Machine Works, Eugene, 359 Pearl St. New York, N. Y.
Seiss Mfg. Co., Phillips Ave. & N. Y. C. Ry., Toledo, O.
Sessions & Son, J. H., Bristol, Conn.
Shapiro & Aronson, 30 Warren St., New York, N. Y.
Sharon Pressed Steel Co., Sharon, Pa.
Shaw Mfg. Co., 126 Massachusetts Ave., Boston, Mass. (See page 1133.)
Shawmut Iron & Wire Works, 97 Tileston St., Everett, Mass.
Shonk Works, Maywood, Ill.

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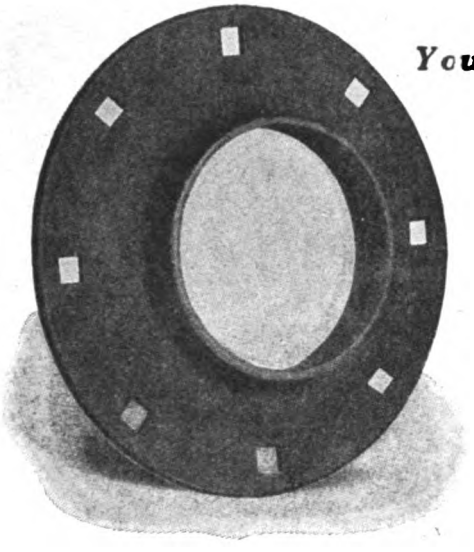

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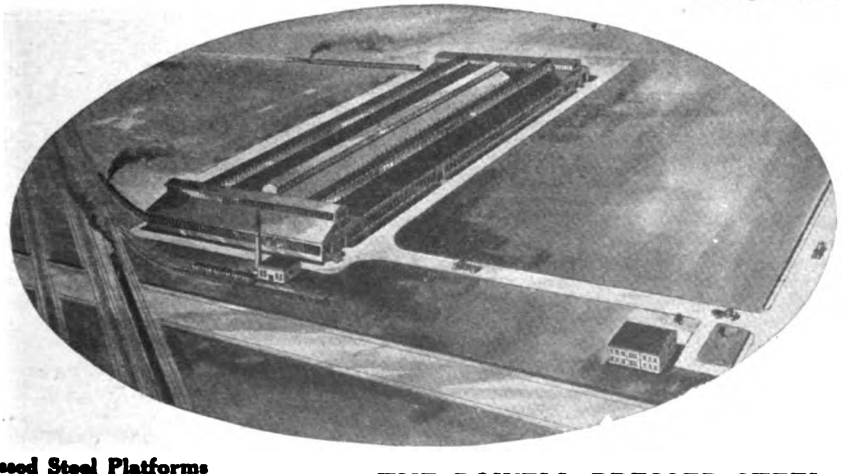

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Shunk Mfg. Co., Bucyrus, O.
Simplex Stamping Co., 367 Ellicott St., Buffalo, N. Y.
Simplex Steel Stamping Co., 1926-28 Gravois Ave., St. Louis, Mo.
Slick-Knox Steel Co., Sharon, Pa.
Smith Co., Thomas, 18 Cypress St., Worcester, Mass.
Smith Corp., A. O., Milwaukee, Wis. (See page 671.)
Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
Smith Mfg. Co., W. F., 157 Stratford Ave., Bridgeport, Conn.
Special Machinery Co., 40 Rimer St., Bridgeport, Conn.
Specialty Products Co., 494 Mulberry St., Newark, N. J.
Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.
Spiro Mfg. Co., C., 68-72 E. 131st St., New York, N. Y.
Spring Snap Fastener Co., Lynn, Mass.
Stamping & Tool Co., Third & Cass Sts., La Crosse, Wis.
Standard Mfg. Co., Shelby, O.
Standard Metal Mfg. Co., 237 Chestnut St., Newark, N. J.
Standard Metal Spinning Co., 188 Mott St., New York, N. Y.
Standard Separator Co., 45th St. & Burnham Rd., Milwaukee, Wis.
Standard Steel Box Co., Villars Ave., Bridgeville, Pa.
Standard Tool & Mfg. Co., 512 E. Lafayette Blvd., Detroit, Mich.
Stanley Works, New Britain, Conn. (See page 499.)
Stauffer & Son, P. S., 63 Governor St., Springfield, Mass.
Stearns Stamping Co., W. H., 34 Southbridge St., Worcester, Mass.
Steel Furniture Co., 1480 Buchanan Ave., S. W., Grand Rapids, Mich.
Steger & Sons Piano Mfg. Co. (Industrial Division), Steger, Ill.
Steiner & Co., Wm., 279 Washington St., Newark, N. J.
Stenman Wire Specialty Co., 18 Grafton St., Worcester, Mass.
Stephans Nut & Bolt Co., Main & Crawford Sts., Pawtucket, R. I.
Sterling Tool & Mfg. Co., 495 Broadway, Milwaukee, Wis.
Stewart-Skinner Co., 17 Green St., Worcester, Mass.
Stimpson Co., Edwin B., 70 Franklin Ave., Brooklyn, N. Y.
Superior Metal Products Co., Elyria, O. (See page 927.)
Superior Seal & Stamp Co., 217 Jefferson Ave., Detroit, Mich. (See page 905.)
Superior Tool & Mfg. Co., 3 Reeves St., Worcester, Mass.
Supreme Machine & Tool Works, 4065 Park Ave., New York, N. Y.
Sutterley & Co., G. T., 1722 N. Second St., Philadelphia, Pa.
Swope-McCracken Co., 73 Monroe Ave., Detroit, Mich.
Syracuse Metal Products Corp., 316 Madison St., Syracuse, N. Y.
Syracuse Stamping Co., 422 West Ave., Syracuse, N. Y.
T. & D. Mfg. Co., 207 Canal St., New York, N. Y.
Taylor-Shants Co., 478 St. Paul St., Rochester, N. Y.
Tiffin Art Metal Co., Tiffin, O.
Toledo Bridge & Crane Co., Toledo, O.
Toledo Steel Barrel Co., Toledo, O.
Torrington Mfg. Co., 70 Franklin St., Torrington, Conn.
Transue & Williams Steel Forging Corp., Alliance, O. (See page 895.)
Triumph Mfg. Co., Kansas City, Mo.
Trumbull, F. S., Bishop & Conn. Aves., Bridgeport, Conn.
Truscon Steel Co., Albert St., Youngstown, O.
Turner Novelty Co., John C., Dayton, O.
U. S. Pressed Steel Co., Stewart St., Ypsilanti, Mich.
Varley Mfg. Co., Findlay, O.
Viking Tool & Machine Co., 243-49 44th St., Brooklyn, N. Y.
Vogel & Bros., Wm., Brooklyn, N. Y. (See page 433.)
Vulcan Auto Parts Co., 2126-30 Race St., Philadelphia, Pa.
Wagner Mfg. Co., E. R., North Milwaukee, Wis. (See page 905.)
Walker Body Co., Amesbury, Mass.
Walsham Co., Josiah, 48 Dudley St., Providence, R. I.
Ware Bros. Automatic Products, 224 N. Ada St., Chicago, Ill.
Waterbury Brass Goods Corp., 160 Washington Ave., Waterbury, Conn.
Weber-Knapp Co., Jamestown, N. Y.
West Michigan Machine Tool Co., 231 Ionia Ave., Grand Rapids, Mich.
Western Metal Specialty Co., 1919 St. Paul Ave., Milwaukee, Wis.
Wheeler Reflector Co., 156 Pearl St., Boston, Mass.
Wheeler & Son, Frank, 55 Stone St., Meriden, Conn.
White-Quehl Mfg. Co., 427 E. Pearl St., Cincinnati, O.
Wickwire Spencer Steel Corp., Worcester, Mass. (See pages 829 and 909.)
Wilcox Pressed Steel Co., 1713-35 Armitage Ave., Chicago, Ill.
Wilson Body Co., C. R., 1600 Clay Ave., Detroit, Mich.
Wilton Machine Tool Co., 84 Linden Park St., Boston, Mass.
Worcester Pressed Steel Co., Worcester, Mass. (See page 919.)
Worcester Stamped Metal Co., Worcester, Mass. (See page 1019.)
York Corrugating Co., York, Pa.
Youngstown Pressed Steel Co., Youngstown, O. (See page 899.)
Zeidler Co., William A., 182 Locust St., New York, N. Y.
Zenite Metal Co., 201-05 N. West St., Indianapolis, Ind. (See page 637.)

STAMPS, Steel

(For numbering or lettering Parts)

Baird Equipment Co., 324 W. Ohio St., Chicago, Ill.
Becker Engraving Co., August, 247 Atlantic Ave., Boston, Mass.
Bloch Metal Stamping Co., 88-90 Walker St., New York, N. Y.
Brookes & Co., E. J., 227 Fulton St., New York, N. Y.
Childs & Co., S. D., 136 S. Clark St., Chicago, Ill.

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METAL STAMPINGS

Hood Fasteners
Hood Handles

FOR AUTOMOBILES

Robe Rails
Foot Rails

E.R.WAGNER MFG CO.

NORTH MILWAUKEE, WIS.

MATTHEWS

Matthews' Steel Stamps have *won favor* in the foremost plants in America. But then that is not to be wondered at because *over 70 years' experience* in making them better and better puts them in the *lead*.

Some day *you* will want such stamps. *Write for booklet.*

Detroit Representative: C. O. Malmstrom, 81 Edmund Place. Phone Cadillac 5287.

Jas. H. Matthews & Co.
1537 Forbes Field,
Pittsburgh, Pa.

SUPERIOR
Seal and Stamp Co.

217 Jefferson Ave.
DETROIT, MICH.

Seals — Stencils
Steel Stamps
Rubber Stamps

Tool Checks
Trade Checks

Employees' Identification Badges

SMALL METAL STAMPINGS

Specify "PANNIER Made"

Master Markers

STEEL:
LETTERS AND FIGURES
HAND STAMPS
TRADE MARK STAMPS
STAMPING DIES

for Master Markings

MASTER PANNIER MARKERS

Pannier Bros. Stamp Co.

207-209 Sandusky Street
PITTSBURGH, PA.

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STAMPS, Steel (Continued)

Hanson Co., C. H., 178 N. Clark St., Chicago, Ill.

Hoggson & Pettis Mfg. Co., 141 Brewery St., New Haven, Conn.

Kauts & Co., Fred C., 2633-35 W. Lake St., Chicago, Ill.

Keene, Fred H., 152 Chambers St., New York, N. Y.

Knight & Son, H. W., Seneca Falls, N. Y.

McNamara, M., 35 Nassau St., New York, N. Y.

Matthews & Co., Jas. H., 1537 Forbes Field, Pittsburgh, Pa. (See page 905.)

Mayer Co., Geo. J., 36 S. Meridian St., Indianapolis, Ind.

Mulhaupt, F. Jos., 227 N. Fifth St., Lafayette, Ind.

Murdoch Co., Jas., 116 Opera Pl., Cincinnati, O.

Ness, Jr., Geo., M., 61 Fulton St., New York, N. Y.

New York Stencil Works, 100 Nassau St., New York, N. Y.

Noble & Westbrook Mfg. Co., 9 Asylum St., Hartford, Conn.

Pannier Bros. Stamp Co., 207-09 Sandusky St., Pittsburgh, Pa. (See page 905.)

Patent Die & Stencil Works, 65-71 Broadway, Astoria, N. Y.

Pittsburgh Stamp Co., 314 Penn Ave., Pittsburgh, Pa.

Schoder & Lombard Co., 202-04 Centre St., New York, N. Y. "Salco Master."

Salco Master—See Schoder & Lombard Co.

Schwerdtle Stamp Co., 39-41 Cannon St., Bridgeport, Conn.

Superior Seal & Stamp Co., 217 Jefferson Ave., Detroit, Mich. (See page 905.)

Walter & Sons, N. C., 3 Park Row, New York, N. Y.

Wright & Son, Greg. G., 119-21 Opera Pl., Cincinnati, O.

STAMPS, Time

Automatic Time Stamp Co., 160 Congress St., Boston, Mass.

Calculagraph Co., 30 Church St., New York, N. Y.

Cosmo—See Joslin Mfg. Co.

Eclipse—See Joslin Mfg. Co.

Follett Time Recording Co., 9-11 W. Broadway, New York, N. Y.

Hoggson & Co., S. H., Thames Bldg., New York, N. Y.

Joslin Mfg. Co., A. D., 223-25 W. Erie St., Chicago, Ill. "Cosmos," "Eclipse."

Kastens, Henry, 419½ W. 27th St., New York, N. Y. (See page 251.)

STANDARD BOXES—See Boxes, Standard and Curb

STANDS, Aircraft Propeller Vise

Fay & Egan Co., J. A., 415 W. Front St., Cincinnati, O.

STANDS, AXLE, FOR FORDS—See Stands, Rear Axle

STANDS, BURNING IN—See Stands, Engine Repair.

STANDS, Electric Test

(For testing, starting and lighting equipment)

Becker Bros., 23-31 N. Jefferson St., Chicago, Ill. (See page 171.)

STANDS, Electric Test, for Fords

(For testing, starting and lighting equipment)

Becker Bros., 23 N. Jefferson St., Chicago, Ill.

F-B Electric & Mfg. Co.—See Fairbanks Co.

Fairbanks Co., New York, N. Y. (Sole Distributors for F-B Electric & Mfg. Co., Detroit, Mich.) (See pages 137 to 140.)

Niehoff & Co., Paul G., 232-42 E. Ohio St., Chicago, Ill. (See page 677.)

Onan, David W., 1323 Penn Ave., N., Minneapolis, Minn. (See page 1127.)

STANDS, Engine Repair

American—See Fairbanks Co.

Brodrib Bros., 59 Congress St., Hartford, Conn.

Buckeye—See Central Brass & Fixture Co.

Canedy-Otto Mfg. Co., Chicago Heights, Ill.

Carswell-Hammond Mfg. Co.—See Zinke Co.

Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."

Continental Auto Parts Co., 1807 E. 17th St., Columbus, Ind. (See page 419.)

Dearborn Equipment Co., Kalamazoo, Mich. (See page 403.)

Dolder Mfg. Co., Earlville, Ill.

Ekern Bros. Mfg. Co., Flandreau, S. Dak.

Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill. "American.") (See pages 137 to 140.)

Foundry Mfg. Co.—See International Purchasing Bureau.

Haberkorn & Co., C. H., 1331 W. Elizabeth St., Detroit, Mich.

Haco—See Hathorn Auto Co.

Hathorn Auto Co., 109-11 First St., S. E., Mason City, Ia. "Haco."

Herschell-Spillman Motor Co., North Tonawanda, N. Y. (See page 379.)

International Purchasing Bureau, 203 E. 15th St., New York, N. Y. (Sole Distributors for Foundry Mfg. Co., St. Albans, Vt.)

Kund & Eiben Mfg. Co., 204-24 Warrington Ave., Pittsburgh, Pa.

Manley Mfg. Co., York, Pa. (See page 327.)

Miller Tool & Mfg. Co., 1725 16th St., Detroit, Mich. (See page 1167.)

Moak Machine & Tool Co., 2547 Connors St., Port Huron, Mich.

O'Brien Mfg. Co., Broadway Bank Bldg., Denver, Col.

Peerblow Mfg. Co., Leetsdale, Pa. "Rhedman."

Portable Tool Supply Co., 256 Main St., Buffalo, N. Y.

Rhedman—See Peerblow Mfg. Co.

Service Station Equipment Co.—See Fairbanks Co.

Shewalter Mfg. Co., 1217 Phythian St., Springfield, O. "Universal."

Storm Mfg. Co., Dept. L., Minneapolis, Minn. (See page 983.)

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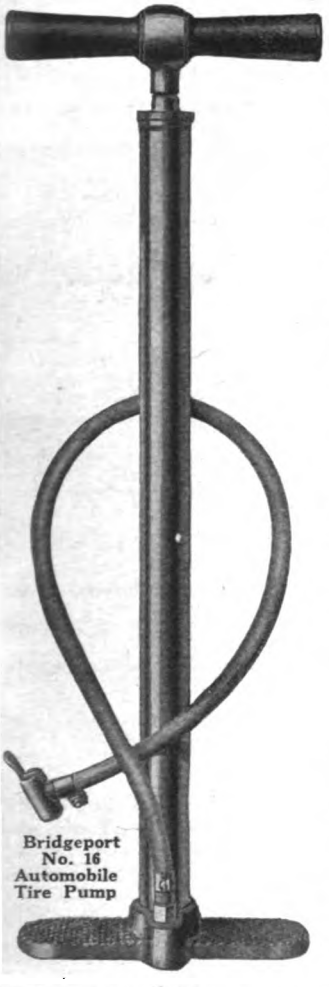
Bridgeport Tire Pumps

"Bridgeport" BRASS CO. U.S.A. U.S.A. TRADE MARK



Bridgeport No. 16 Automobile Tire Pump

Rust Proof:

The barrel is made of seamless-drawn brass, and is, therefore, immune to rust, the greatest enemy of any pump.

Leak Proof:

Our patented reinforcement expands the barrel right into the footbase, making the joint leak-proof. There is no solder or anything to loosen and cause leakage.

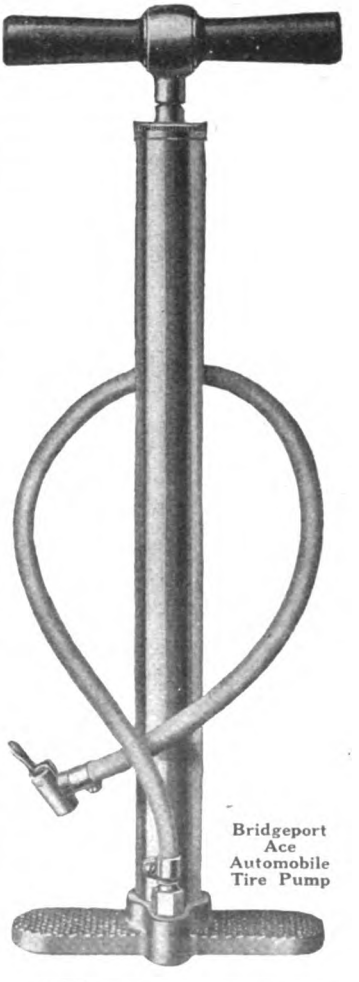
Better Built:

From raw materials to finished product, this pump has been built by modern methods in a modern factory by a company with twenty-eight years' experience in the building of better tire pumps.

Guarantee

If at any time this pump should prove unsatisfactory, due to defects in either workmanship or material, return it to us and we shall remedy the defect or send you a new pump.

Let Us Send You Pump Booklet 2



Bridgeport Ace Automobile Tire Pump

Bridgeport Brass Company
Bridgeport Connecticut

2265

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STANDS, Engine Repair (Continued)

Universal—See Shewalter Mfg. Co.

Whaley & Co., Edward A., Princess Anne Ave. & Virginian Railroad, Norfolk, Va.

Western Mfg. Co., Sixth Ave., E. & S. Third Sts., Oskaloosa, Ia.

Wisconsin Welding & Cutting Co., 556 E. Water St., Milwaukee, Wis. (See page 1153.)

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Carswell-Hammond Mfg. Co., Boone, Ia.) (See page 313.)

STANDS, Engine Repair for Fords

(For Burning-In Machines—See Machines, Burning-In)

Amelung Mfg. Co., A. F., First St., Sanborn, Iowa.

American—See Fairbanks Co.

Auto Mechanics Tool Co., 2501 S. Washington St., Peoria, Ill. "Peoria."

Boel Mfg. Co., Temple Ct. Bldg., Minneapolis, Minn. "Wilber."

Canedy-Otto Mfg. Co., Chicago Heights, Ill.

Carswell-Hammond Mfg. Co.—See Zinke Co.

Continental Auto Parts Co., 1807 E. 17th St., Columbus, Ind. (See page 419.)

Danielson Tool Works, Fulton St., Wausau, Wis.

Dyer Co., G. H., 155 Brookline St., Cambridge, Mass.

Eco—See Western Mfg. Co.

Economy Auto Supply Co., Denver, Colo. "O'Brien."

Ekern Bros. Mfg. Co., Flandreau, S. Dak.

Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill. "American.") (See pages 137 to 140.)

K. & S.—See Water Street Garage & Machine Co.

Kund & Eiben Mfg. Co., 204-24 Warrington Ave., Pittsburgh, Pa.

Manley Mfg. Co., York, Pa. (See page 327.)

Miles Mfg. Co., Newton, Ia.

Motax Mfg. Co., Taylorville, Ill.

Nelson & Son, T. K., 606 Hill St., Harlan, Ia.

O'Brien—See Economy Auto Supply Co.

Peoria—See Auto Mechanics Tool Co.

Peerblow Mfg. Co., Leetsdale, Pa. "Rhedman."

Railway Specialty Co., Atchison, Kans. "Rysco."

Rhedman—See Peerblow Mfg. Co.

Rysco—See Railway Specialty Co.

Service Station Equipment Co.—See Fairbanks Co.

Spencer & Nelson, Lake View, Ia.

Water Street Garage & Machine Co., 728-30 Water St., South Brownsville, Pa. "K. & S."

Western Mfg. Co., Sixth Ave., E. & S. Third St., Oskaloosa, Ia. "Eco."

Wilber—See Boel Mfg. Co.

Wilson, K. R., 10-16 Lock St., Buffalo, N. Y. (See page 611.)

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Carswell-Hammond Mfg. Co., Boone, Ia.) (See page 313.)

STANDS, Generator Holding

Durham Co., P. J., 244 W. 49th St., New York, N. Y. (See page 531.)

STANDS, LIGHT—See Lights, Wash Stand

STANDS, Portable Tool

Acme Sheet Metal & Mfg. Co., 2343 Lakeside Ave., Cleveland, O.

Champion—See Western Tool & Mfg. Co.

Continental Auto Parts Co., 1807 E. 17th St., Columbus, Ind. (See page 419.)

Dyer Co., G. H., 155 Brookline St., Cambridge, Mass.

Manley Mfg. Co., York, Pa. (See page 327.)

New Britain Machine Co., Chestnut St., New Britain, Conn.

Portable Tool Supply Co., 256 Main St., Buffalo, N. Y.

Western Tool & Mfg. Co., Springfield, O. "Champion."

STANDS, Radiator Repair

Automotive Radiator Machine Co., 628½ Central Ave., Fort Dodge, Ia. "Schulz."

Continental Auto Parts Co., 1807 E. 17th St., Columbus, Ind. (See page 419.)

Dearborn Equipment Co., Kalamazoo, Mich. (See page 403.)

Schulz—See Automotive Radiator Machine Co.

STANDS, Rear Axle Repair, for Fords

American—See Fairbanks Co.

Carswell-Hammond Mfg. Co.—See Zinke Co.

Continental Auto Parts Co., 1807 E. 17th St., Columbus, Ind. (See page 419.)

Danielson Tool Co., Fulton St., Wausau, Wis.

Eco—See Western Mfg. Co.

Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill. "American.") (See pages 137 to 140.)

Miles Mfg. Co., Newton, Ia.

Nazett Mfg. Co., 1440 Washington St., Eldora, Ia.

Service Station Equipment Co.—See Fairbanks Co.

Western Mfg. Co., Sixth Ave., E. & S. Third Sts., Oskaloosa, Ia. "Eco."

Wisconsin Welding & Cutting Co., 556 E. Water St., Milwaukee, Wis. (See page 1153.)

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Carswell-Hammond Mfg. Co., Boone, Ia.) (See page 313.)

STANDS, REPAIR—See Stands, Engine Repair; also Stands, Portable Tool; also Stands, Rear Axle Repair; also Stands, Radiator Repair

STANDS, Tire Building

DeMattia Bros., Garfield, N. J.

Hibbs Rubber Co., 300 S. Boas St., Fort Worth, Tex.

Miller, Chas. E., 1400 S. Meridian St., Anderson, Ind.

P. I. W.—See Pechstein Iron Works.

Pechstein Iron Works, Keokuk, Ia. "P. I. W."

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MOTOR CAR SPRINGS

Our large and highly specialized spring coiling and forming equipment, together with our facilities for drawing and heat treating our own wire, from either carbon or alloy steel, make us the logical source of supply for the motor car and accessory manufacturers.

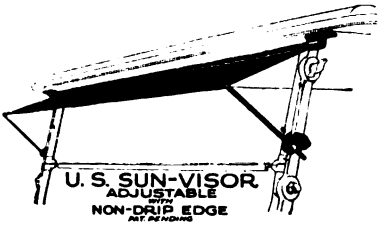
Our Engineering Department will be glad to lend you any assistance possible. Write our nearest office regarding your requirements.

Wickwire Spencer Steel Corporation

Worcester, Mass.
Buffalo, N. Y.

District Offices and Warehouses:

256 Franklin St.	Boston, Mass.
120 Broadway	New York, N. Y.
237 N. Sixth St.	Philadelphia, Pa.
Book Bldg.	Detroit, Mich.
33 W. Austin Ave.	Chicago, Ill.
Mayo Bldg.,	Tulsa, Okla.
111 Townsend St.	San Francisco



U. S. Sun Visor

THE U. S. Sun Visor keeps sun glare out of the driver's eyes and rain and snow from the windshield. Disagreeable windshield reflections are diffused and the driver can see clearly without straining his eyes.

The U. S. Sun Visor makes night driving safer because it eliminates the blinding light of the approaching headlights.

Made of metal finished in black enamel and can be easily attached to any make of car.

For Ford Cars $5.00
For closed cars with stationary brackets . 7.50
For open cars with adjustable brackets . . 8.50

U. S. Thermo Shutter

The U. S. Thermo-Shutter for Fords is necessary equipment for cold weather driving. The motor and radiator temperature can be controlled from the dash under any weather conditions. This increases the efficiency of the motor and saves at least 5% in gasoline consumption, also the alcohol and battery.

Attractive in design and quickly installed. Price $7.50. Louvre slides to close the side openings on the head $2.50.

Dealers: The U. S. Sun Visor and Thermo-Shutter are real business-producers. If you have never sold them, you've missed out on some profitable business. Write us for illustrated literature and trade prices.

U. S. AUTO EQUIPMENT CO.

Manufacturers
Suite 312 Montgomery Bldg.
Milwaukee, Wis.

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STANDS, TOOL—See Stands, Portable Tool

STANDS, WASH STAND LIGHT—See Lights, Wash Stand

STAPLES, Insulated

(Fibre insulated staples for car wiring)

Blake Signal & Mfg. Co., Boston, Mass. (See page 1117.)

STARTER BRUSHES—See Brushes, Magneto, Starter and Generator

STARTER BUSHINGS — See Bushings, Starter or Primer Attaching

STARTER COILS—See Windings, Starter and Ignition

STARTER GEARS, AUTOMATIC—See Gears, Automatic Starter Transmission

STARTER REPAIR PARTS—See Parts, Magneto, Coil and Distributor

STARTER SWITCHES—See Switches, Electric Starter

STARTER WINDINGS — See Windings, Starter and Ignition

STARTERS, Airplane Compressed Air Engine

Buffalo Pressed Steel Co., Buffalo, N. Y. (See page 655.)

Christensen Engineering Co., 425 E. Water St., Milwaukee, Wis.

Liberty—See Motor Starter and Air Pump Co.

Motor Starter & Air Pump Co., 52-60 Dickerson St., Newark, N. J. "Perfect," "Liberty." (See page 289.)

Perfect—See Motor Starter & Air Pump Co.

STARTERS, AIR—See Starters, Compressed Air

STARTERS, Compressed Air Engine

Christensen Engineering Co., 425 E. Water St., Milwaukee, Wis.

Lipman Pump Works, 100 Shirland Ave., Beloit, Wis.

Smith, Irvin C., 1243 W. Pico St., Los Angeles, Cal.

STARTERS, Compressed Air Engine, for Fords

Air Device Co., 2975-77 Cottage Grove Ave., Chicago, Ill. "Ten Eyck."

Kellogg Mfg. Co., Rochester, N. Y. (See page 747.)

Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 177.)

Ten Eyck—See Air Device Co.

STARTERS, COMPRESSED AIR TRACTOR —See Starters, Tractor Compressed Air

STARTERS, COMPRESSED AIR MOTOR BOAT—See Starters, Motor Boat Compressed Air

STARTERS, Electric Engine

American Bosch Magneto Corp., (Brightwood) Springfield, Mass. "Bosch."

Auto-Lite—See Electric Auto-Lite Corp.

Bijur Motor Appliance Co., Hoboken, N. J. (See page 463.)

Bosch—See American Bosch Magneto Corp.

Dayton Engineering Laboratories Co., 329 E First St., Dayton, O. "Delco."

Delco—See Dayton Engineering Laboratories Co.

Dyneto Electric Corp., Syracuse, N. Y. (See page 461.)

Electric Auto-Lite Corp., Toledo, O. "Auto-Lite."

Gray & Davis, Boston, Mass. (See page 911.)

Huff—See Simms Magneto Co.

L-N—See Leece-Neville Co.

Leece-Neville Co., 5363 Hamilton Ave., Cleveland, O. "L-N."

North East Electric Co., Dept. A., Rochester, N. Y. (See page 517.)

Remy Electric Co., 1623 E. Grand Blvd., Detroit, Mich.

Simms Magneto Co., 277 N. Arlington Ave., East Orange, N. J. "Huff."

Wagner Electric Mfg. Co., 6400 Plymouth Ave., St. Louis, Mo.

Westinghouse Electric & Mfg. Co., 82 Worthington St., Springfield, Mass. (See pages 940 and 941.)

STARTERS, Electric Engine, for Fords

Dyneto Electric Corp., Syracuse, N. Y. (See page 461.)

Fisher Electrical Works, 32-36 Lynn St., Detroit, Mich.

Gray & Davis, Boston, Mass. (See page 911.)

Heinze-Springfield—See Service Products Co.

Liberty Starter Co., 702 W. Jefferson Ave., Detroit, Mich.

Liberty Starters Corp., 5 Columbus Circle, New York, N. Y.

Pellet Magneto Co., 25th St. & Wabash Ave., Chicago, Ill. (See page 913.)

Service Products Co., Greenawalt Bldg., Springfield, O. "Heinze-Springfield."

Westinghouse Electric & Mfg. Co., 82 Worthington St., Springfield, Mass. (See pages 940 and 941.)

STARTERS, ELECTRIC ENGINE TRACTOR — See Starters, Tractor Electric Engine

STARTERS, ELECTRIC ENGINE, MOTOR BOAT—See Starters, Motor Boat Electric Engine

STARTERS, Gasoline or Vapor Engine

(For Priming Devices—See Primers, Gasoline Engine)

Automatic Starter Co., 418 N. Third St., St. Louis, Mo.

Brown-Maddock Co., West Newbury, Mass.

Markham Co., W. D., Clarksdale, Miss.

STARTERS, Impulse

American Bosch Magneto Corp. (Brightwood), Springfield, Mass. "Bosch."

Beehler Electrical Equipment Co., Yuma, Colo.

Bosch—See American Bosch Magneto Corp.

Kingston—See Kokomo Electric Co.

Kokomo Electric Co., 1450 N. Webster St., Kokomo, Ind. "Kingston."

Lauraine Magneto Co., 13th St. & Ely Ave., Long Island City, N. Y.

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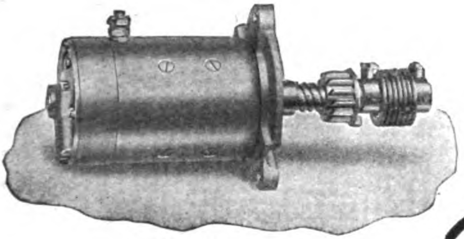
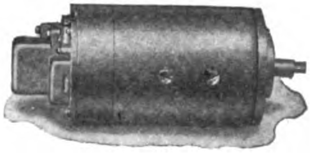
GRAY & DAVIS

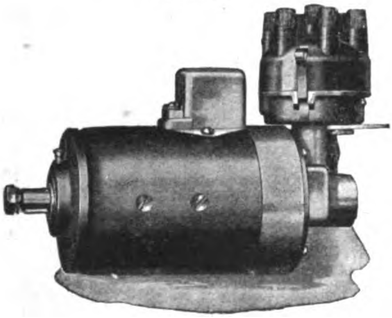
Starting—Lighting—Ignition—Lamps



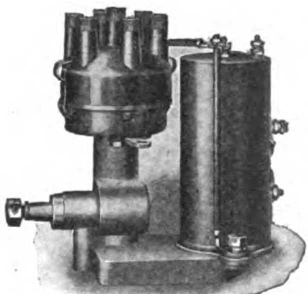
MOTOR



GENERATOR



IGNITION GENERATOR



MAGNETO REPLACEMENT OUTFIT

LIST OF OFFICIAL SERVICE STATIONS

[illegible]

GRAY & DAVIS
OFFICIAL
Service Station

Gray & Davis, Inc. **Boston, Mass.**

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STARTERS, Impulse (Continued)

Safety Impulse Starter Co., 325 N. 15th St., Philadelphia, Pa.

Towar-Ayres Co., 4847 Woodward Ave., Detroit, Mich.

STARTERS, LEVER ENGINE—See Starters, Manual

STARTERS, Manual, Pedal or Lever Engine

(See also Cranks, Safety Starting)

Pres-Toe—See Robertson Machine & Foundry Co.

Robertson Machine & Foundry Co., W., Buffalo, N. Y. "Pres-Toe."

STARTERS, Manual, Pedal or Lever Engine, for Fords

Acme—See Industrial Mfg. Co.

American Simplex Co., 2101 W. 16th St., Anderson, Ind. "Simplex."

American Starter Co., Anderson, Ind. "Simplex."

Ballard, Henry, Patterson, N. Y.

Barrett Motor Starter Mfg. Co., 1777 Broadway, New York, N. Y.

Bear Mfg. Co., E. 17th St. & First Ave., Rock Island, Ill. "Sandbo."

Ezy—See Star Specialty Mfg. Co.

Handee—See Racine Handy Mfg. Co.

Industrial Mfg. Co., 101-03 S. Fifth Ave., Chicago, Ill. "Acme," "O. K."

Knapp Bros., Starter & Equipment Co., 2337 Central Ave., Minneapolis, Minn.

Little Giant Starter Co., 139 Cleveland Ave. S. W., Canton, O.

Miller Mer. Co., Memphis, Mo.

Murphy Starter Co., Ida Grove, Ia.

O. K.—See Industrial Mfg. Co.

Peoria—See United Co.

Pres-Toe—See Robertson Machine & Foundry Co.

Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."

Relax Co., 2118 Monroe Ave., Norwood, O.

Robertson Machine & Foundry Co., 56-58 Rano St., Buffalo, N. Y. "Pres-toe."

Sandbo—See Bear Mfg. Co.

Sieverkropp Engine Co., DeKoven & N. W. Tracks, Racine, Wis.

Simplex—See American Simplex Co.

Simplex Mfg. Co., 1800 Jackson St., Anderson, Ind.

Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. "Ezy." (See page 507.)

3 in 1 Starter Co., 2309 Bosworth Ave., Chicago, Ill.

United Co., 2501 S. Washington St., Peoria, Ill. "Peoria."

Warmerlite Products Corp., Davenport, Iowa. (See page 325.)

STARTERS, Mechanical or Spring Engine, for Fords

American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "Crosley."

Crosley—See American Automobile Accessories Co.

M. M. & E. Sales Co., Lenawee Co. Bank Bldg., Adrian, Mich. "Peerless."

Neher, L. M., Warsaw, Ind.

Peerless—See M. N. & E. Sales Co.

Rockway Starter Co., Lincoln Ave., Waukesha, Wis.

Thomson Mfg. Co., S. H., Fourth & St. Clair Sts., Dayton, O.

Three-in-One Starter Co., 2309 Bosworth Ave., Chicago, Ill.

STARTERS, Motor Boat Compressed Air Engine

Christensen Engineering Co., 425 E. Water St., Milwaukee, Wis.

STARTERS, Motor Boat Electric Engine

North East Electric Co., Dept. D, Rochester, N. Y. (See page 517.)

Simms Magneto Co., 277 N. Arlington Ave., East Orange, N. J.

STARTERS, Motor Boat Rear Engine

Gardner—See Lakeland Motor Works.

Joe's—See Snow & Petrelli Mfg. Co.

Lakeland Motor Works, Lakeland, Mich. "Gardner."

Michigan Wheel Co., 1140-48 Monroe Ave. N. W., Grand Rapids, Mich.

Snow & Petrelli Mfg. Co., 152 Brewery St., New Haven, Conn. "Joe's."

STARTERS, PEDAL ENGINE—See Starters, Manual

STARTERS, SPRING ENGINE—See Starters, Mechanical

STARTERS, Tractor Compressed Air Engine

Christensen Engineering Co., 425 E. Water St., Milwaukee, Wis.

STARTERS, Tractor Electric Engine

North East Electric Co., Dept. D, Rochester, N. Y. (See page 517.)

Remy Electric Co., 1622 E. Grand Blvd., Detroit, Mich.

Simms Magneto Co., 277 N. Arlington Ave., East Orange, N. J.

STARTERS, VAPOR ENGINE—See Starters, Gasoline

STARTING CRANK HANDLES—See Handles, Starting Crank

STARTING CRANK HOLDERS—See Holders, Starting Crank

STARTING CRANK LOCKS—See Locks, Starting Crank

STARTING CRANKS, SAFETY — See Cranks, Safety

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STATIONS, Electric Service

(Covering only electric service stations who advertise in this publication)

Detroit Magneto Exchange, 188 Grand River Ave., Detroit, Mich. (See page 1095.)

Pellet Magneto Co., 25th & Wabash Ave., Chicago, Ill. (See page 913.)

STATOSCOPES, Aircraft

Custer Specialty Co., 119 Franklin St., Dayton, O.

Schneider Bros. Instrument Co., 350-52 Palisade Ave., Jersey City, N. J.

Springwether Instrument Co., W. F., Ozark Bldg., St. Louis, Mo.

STEADIERS, STEERING GEAR — See Checks, Steering Gear

STEADY BEARINGS—See Bearings, Drive Shaft Steady

STEAM BOILERS—See Boilers, Steam

STEAM GAGES—See Gages, Steam

STEAM HAMMERS—See Hammers, Steam

STEAM MOTORS—See Engines, Steam

STEAM PRESSURE CONTROLLERS—See Controllers, Vulcanizer Steam Pressure

STEAM PUMPS—See Pumps, Steam

STEAM STORAGE BATTERY OPENING—See Steamers, Storage Battery.

STEAM TIRE CURING BAGS—See Bags, Steam Tire Curing

STEAMERS, Storage Battery

(Apparatus for softening the sealing compound on storage batteries by means of steam)

Ambu—See American Bureau of Engineering.

American Bureau of Engineering, Michigan Ave. & 16th St., Chicago, Ill. "Ambu." (See page 485.)

Boulton—Perrigo Mfg. Co., 1126 W. Second St., Oklahoma City, Okla. "Scottie."

Electrical Testing Co., 300-02 Knoxville Ave., Peoria, Ill. (See page 917.)

Gillmore Specialty Co., St. Paul, Minn. "Plaskett."

Globe Machine & Stamping Co., 1220-50 W. 76th St., Cleveland, O. (See page 1049.)

Hauck Mfg. Co., 126-34 Tenth St., Brooklyn, N. Y.

Ibsco—See Illinois Battery Steamer Co.

Illinois Battery Steamer Co., 607 Spencer St., Peoria, Ill. "Ibsco."

Orum, S. R. M., 5143 Keyser St. (No. Phila.), Philadelphia, Pa.

Plaskett—See Gillmore Specialty Co.

Reliable Mfg. Co., 2819 Prospect Ave., Cleveland, O.

Scottie—See Boulton-Perrigo Mfg. Co.

Shonts Co., H. B., 157 W. 54th St., New York, N. Y. (See page 733.)

STEEL or Iron, Angle, Channel and Tee

Bethlehem Steel Co., Third & Poplar Sts., South Bethlehem, Pa.

Betz-Pierce Co., Cleveland, O. (Distributors.) (See page 915.)

Cambria Steel Co., Johnstown, Pa.

Carnegie Steel Co., Carnegie Bldg., Pittsburgh, Pa.

Illinois Steel Co., 203 S. La Salle St., Chicago, Ill.

Inland Steel Co., First National Bank Bldg., Chicago, Ill.

Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill. (See page 915.)

Jones & Laughlin Steel Co., Jones & Laughlin Bldg., Pittsburgh, Pa.

Lockhart Iron & Steel Co., McKees Rocks, Pa. "Vulcan."

Logan Iron & Steel Co., 1421 Chestnut St., Philadelphia, Pa.

Pollak Steel Co., 2815-16 Equitable Bldg., New York, N. Y. (See page 423.)

Republic Iron & Steel Co., Republic Bldg., Youngstown, O.

Vulcan—See Lockhart Iron & Steel Co.

STEEL BALLS—See Balls, Steel

STEEL or Iron, Bar

American Iron & Steel Mfg. Co., Front & Cumberland Sts., Lebanon, Pa.

Andrews Steel Co., Ninth & Lowell Sts., Newport, Ky.

Argo—See Illingsworth Steel Co.

Bethlehem Steel Co., Third & Poplar Sts., South Bethlehem, Pa.

Betz-Pierce Co., Cleveland, O. (Distributors.) (See page 915.)

Cambria Steel Co., Johnstown, Pa.

Carnegie Steel Co., Carnegie Bldg., Pittsburgh, Pa.

Illingsworth Steel Co., John (Frankford), Philadelphia, Pa. "Argo."

Illinois Steel Co., 203 S. La Salle St., Chicago, Ill.

Inland Steel Co., First National Bank Bldg., Chicago, Ill.

Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill. (See page 915.)

Jones & Laughlin Steel Co., Jones & Laughlin Bldg., Pittsburgh, Pa.

Lackawanna Steel Co., Lackawanna, N. Y.

La Salle Steel Co., 2305 S. Halsted St., Chicago, Ill.

Lockhart Iron & Steel Co., McKees Rocks, Pa. "Vulcan."

Logan Iron & Steel Co., 1421 Chestnut St., Philadelphia, Pa.

Pardee Works, C., Herbert & Market Sts., Perth Amboy, N. J.

Pollak Steel Co., 2815-16 Equitable Bldg., New York, N. Y. (See page 423.)

Railway Steel Spring Co., 30 Church St., New York, N. Y.

Republic Iron & Steel Co., Republic Bldg., Youngstown, O.

Simonds Mfg. Co., Lockport, N. Y. (See page 917.)

Tacony Steel Co. (Tacony), Philadelphia, Pa.

United Alloy Steel Co., Eighth St. Extension, Canton, O.

Universal Steel Co., Bridgeville, Pa.

Vulcan—See Lockhart Iron & Steel Co.

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323 Fulton Bldg., Pittsburgh.

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STEEL OR IRON, Bar (Continued)

STEEL CASTINGS—See Castings, Steel

STEEL, CHANNEL—See Steel, Angle

STEEL, Chrome

American Stainless Steel Co., 1547 Oliver Bldg., Pittsburgh, Pa. (See page 935.)
Atlas Crucible Steel Co., Dunkirk, N. Y. (See page 915.)
Bethlehem Steel Co., Third & Poplar Sts., South Bethlehem, Pa.
Carpenter Steel Co., Reading, Pa.
Columbia Tool Steel Co., 14th & Butterfield Sts., Chicago Heights, Ill.
Crucible Steel Co. of America, Oliver Bldg., Pittsburgh, Pa.
Firth-Sterling Steel Co., McKeesport, Pa.
Halcomb Steel Co., Syracuse, N. Y.
Haynes & Son, Kokomo, Ind.
Latrobe Electric Steel Co., Latrobe, Pa.
Midvale Steel & Ordnance Co., Widener Bldg., Philadelphia, Pa.
National Drawn Steel Co., East Liverpool, O.
Vanadium-Alloys Steel Co., Pittsburgh, Pa.
Vulcan Crucible Steel Co., First St., Aliquippa, Pa.
Washington Steel & Ordnance Co., Washington, D. C.

STEEL, Chrome Nickel

Agathon—See Central Steel Co.
American Import & Export Co., 150 Nassau St., New York, N. Y. (Importers.)
American Stainless Steel Co., 1547 Oliver Bldg., Pittsburgh, Pa. (See page 935.)
Andrews Steel Co., Ninth & Lowell Sts., Newport, Ky.
Arbo—See Carbon Steel Co.
Argo—See Illingsworth Steel Co.
Arrow—See Crowley Co.
Becker Steel Co. of America, 154 Nassau St., New York, N. Y. (Importers.)
Bethlehem Steel Co., Third & Poplar Sts., South Bethlehem, Pa.
Betz-Pierce Co., Cleveland, O. (Distributors.) (See page 915.)
Carbon Steel Co., ft. 32d St., Pittsburgh, Pa. "Arbo," "Decco," "Shrapo."
Carnegie Steel Co., Carnegie Bldg., Pittsburgh, Pa.
Carpenter Steel Co., Reading, Pa. "Samson."
Central Steel Co., Massillon, O. "Agathon."
Crowley, John A., 120-22 Liberty St., New York, N. Y. "Arrow."
Crucible Steel Co. of America, Oliver Bldg., Pittsburgh, Pa. "Simplex," "Duplex."
Decco—See Carbon Steel Co.
Duplex—See Crucible Steel Co. of America.
Fairley-Davidson Steel Co., 124 Maiden Lane, New York, N. Y. (Importers.) "Hehtemnd."
Frasse & Co., Peter A., 417-21 Canal St., New York, N. Y. (See page 279.)
Halcomb Steel Co., Syracuse, N. Y.
Hehtemnd—See Fairley-Davidson Steel Co.
Hercules Electric Steel Corp., 137-45 Lafayette St., New York, N. Y. "Urite."
Illingsworth Steel Co., John (Frankford), Philadelphia, Pa. "Argo."
Illinois Steel Co., 203 S. La Salle St., Chicago, Ill.
Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill. (See pgae 915.)
La Salle Steel Co., 2305 S. Halsted St., Chicago, Ill.
Lindenberg Steel Co., 90 West St., New York, N. Y. (Importers.)
McInnes Steel Co., Corey, Pa.
Midvale Steel & Ordnance Co., Widener Bldg., Philadelphia, Pa.
National Drawn Steel Co., East Liverpool, O.
Roechling Electro Steel Co., 173-77 Lafayette St., New York, N. Y. (Importers.)
Samson—See Carpenter Steel Co.
Shrapo—See Carbon Steel Co.
Simplex—See Crucible Steel Co. of America.
Tacony Steel Co. (Tacony), Philadelphia, Pa.
Union Drawn Steel Co., Beaver Falls, Pa. (See page 919.)
United Alloy Steel Co., Eighth St. Extension, Canton, O. "Tusco."
Universal Steel Co., Bridgeville, Pa.
Urite—See Hercules Electric Steel Corp.
Vulcan Crucible Steel Co., First St., Aliquippa, Pa.

STEEL CLUTCH DISCS—See Discs, Steel

STEEL, Cold Rolled Bar

Betz-Pierce Co., Cleveland, O. (Distributors.) (See page 915.)
Cambria Steel Co., Johnstown, Pa.
Columbia Steel & Shafting Co., Pittsburgh, Pa.
Compressed Steel Shafting Co., 1587 Hyde Park Ave. (Readville), Boston, Mass.
Crucible Steel Co. of America, Oliver Bldg., Pittsburgh, Pa.
Cumberland Steel Co., William St. & B. & O. R. R., Cumberland, Md.
Jones & Laughlin Steel Co., Jones & Laughlin Bldg., Pittsburgh, Pa.
Lancaster Steel Products Co., Manheim Pike, Lancaster, Pa.
La Salle Steel Co., 2305 S. Halsted St., Chicago, Ill.
Moltrup Steel Products Co., Beaver Falls, Pa. (See page 919.)
National Drawn Steel Co., East Liverpool, O.
Pardee Works, C., Herbert & Market Sts., Perth Amboy, N. J.
Peerless Drawn Steel Co., Massillon, O.
Pittsburgh Shafting Co. of Detroit, 1300 W. Fort St., Detroit, Mich.
Union Drawn Steel Co., Beaver Falls, Pa. (See page 919.)
United Alloy Steel Co., Eighth St. Extension, Canton, O.
Witherow Steel Co., Keystone Bldg., Pittsburgh, Pa.

STEEL, Cold Rolled Strip

American Tube & Stamping Co., 411 Hancock Ave., Bridgeport, Conn.
Betz-Pierce Co., Cleveland, O. (Distributors.) (See page 915.)
Bordentown Steel & Tube Corp., Bordentown, N. J.
Carpenter Steel Co., Reading, Pa.
Columbia Steel Co., Elyria, O.
Crucible Steel Co. of America, Oliver Bldg., Pittsburgh, Pa.
Elyria Iron & Steel Co., Cleveland, O. (See page 1025.)
Frasse & Co., Peter A., New York, N. Y. (New Jersey, Pennsylvania and New York Distributors for Griffin Steel.) (See page 279.)

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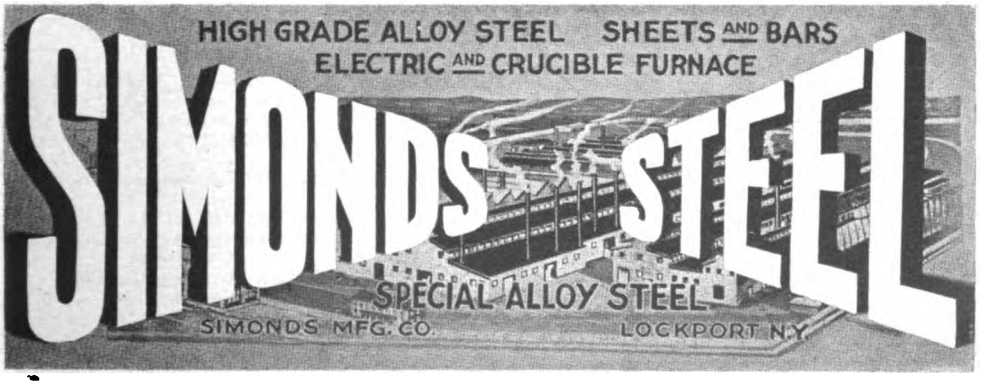

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STEEL, Cold Rolled Strip (Continued)

Greer Steel Co., Dover, O.

Griffin Mfg. Co., 15th & Cherry Sts., Erie, Pa.

La Salle Steel Co., 2305 S. Halsted St., Chicago, Ill.

Lancaster Steel Products Co., Manheim Pike, Lancaster, Pa.

Moltrup Steel Products Co., Beaver Falls, Pa. (See page 919.)

Morris & Bailey Steel Co., Pittsburgh, Pa.

Peerless Drawn Steel Co., Massillon, O.

Pittsburgh Shafting Co. of Detroit, 1300 W. Fort St., Detroit, Mich.

Stanley Works, New Britain, Conn. (See page 499.)

Superior Steel Corp., Union Arcade Bldg., Pittsburgh, Pa.

Weirton Steel Co., Weirton, W. Va.

West Leechburg Steel Co., 305 Fifth Ave., Pittsburgh, Pa.

Worcester Pressed Steel Co., Worcester, Mass. (See page 919.)

STEEL CUTTING—See Steel, High-Speed Cutting; also Steel, Self-Hardening

STEEL, Hot Rolled Strip

American Tube & Stamping Co., 411 Hancock Ave., Bridgeport, Conn.

Bets-Pierce Co., Cleveland, O. (Distributors.) (See page 915.)

Bordentown Steel & Tube Corp., Bordentown, N. J.

Elyria Iron & Steel Co., Cleveland, O. (See page 1025.)

National Pressed Steel Co., Massillon, O. "Robal." (See page 917.)

Robal—See National Pressed Steel Co.

Superior Steel Corp., Union Arcade Bldg., Pittsburgh, Pa.

Weirton Steel Co., Weirton, W. Va.

West Leechburg Steel Co., 305 Fifth Ave., Pittsburgh, Pa.

Worcester Pressed Steel Co., Worcester, Mass. (See page 919.)

STEEL CRADLES, PORTABLE—See Cradles, Portable Steel

STEEL, Dealers in

(Comprising only Dealers in Iron, Steel and other metals who advertise in this publication)

Bets-Pierce Co., Cleveland, O. (Distributors.) (See page 915.)

Morris & Co., E. K., 311-17 W. Second St., Cincinnati, O. (See page 1145.)

STEEL FAN PULLEYS — See Pulleys, Pressed Steel Fan

STEEL, High-Speed Cutting

Albion—See Hobson, Houghton & Co.

Allen & Co., Edgar, 713 W. Lake St., Chicago, Ill. (Importers.)

Andrew & Co., J. H., 26 Cortlandt St., New York, N. Y. (Importers.) "Toledo."

Ark—See Jessop & Sons.

Arrow—See Crowley Co.

Atlas Crucible Steel Co., Dunkirk, N. Y. (See page 915.)

Becker Steel Co. of America, 154 Nassau St., New York, N. Y. (Importers.)

Bets-Pierce Co., Cleveland, O. (Distributors.) (See page 915.)

Blancke Co., L. C., 10-12 Thomas St., New York, N. Y. (Sole Distributors for Blancke Steel Co., Taunton, Mass.)

Blanke Steel Co.—See Blanke Co.

Bohlers—See Houghton & Richards.

Burgess—See Cyclops Steel Co.

Carpenter Steel Co., Reading Pa. "Star Zenith."

Clarite—See Columbia Tool Steel Co.

Colonial Steel Co., 324 Fourth Ave., Pittsburgh, Pa.

Columbia Tool Steel Co., 14th & Butterfield Sts., Chicago Heights, Ill. "Clarite."

Como—See Darwin & Milner.

Crowley, John A., 120-22 Liberty St., New York, N. Y. "Arrow."

Crucible Steel Co. of America, Oliver Bldg., Pittsburgh, Pa. "Rex."

Cyclops Steel Co., 265 E. Spring St., Titusville, Pa. "Burgess."

Darwin & Milner (Importers), 156 Broadway, New York, N. Y. "Como."

Dreadnought—See Halcomb Steel Co.

Fairley-Davidson Steel Co., 124 Maiden Lane, New York, N. Y. (Importers.) "X-tof," "Rushitoff."

Fearless—See Hobson, Houghton & Co.

Frasse & Co., Peter A., 417-21 Canal St., New York, N. Y. (See page 279.)

Halcomb Steel Co., Syracuse, N. Y. "Dreadnought."

Hammond Steel Co., 2600 Milton Ave., Syracuse, N. Y.

Heller Bros. Co., 865 Mt. Prospect Ave., Newark, N. J.

Hercules Electric Steel Corp. 137-45 Lafayette St., New York, N. Y. "Urite."

Hobson, Houghton & Co., 38 Beekman St., New York, N. Y. (Importers.) "Albion," "Fearless."

Houghton & Richards, 145 Oliver St., Boston, Mass. "Bohlers."

Improved Capital—See Ward's Sons Co.

Jessop & Sons, Wm., 91 John St., New York, N. Y. (Importers.) "Ark."

L-XX—See Atlas Crucible Steel Co.

Latrobe Electric Steel Co., Latrobe, Pa.

Le Moyne Steel Co., Park Bldg., Pittsburgh, Pa.

Lindenberg Steel Co., 90 West St., New York, N. Y. (Importers.)

Ludlum Steel Co., Watervliet, N. Y. "Mohawk."

Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y.

McInnes Steel Co., Corry, Pa.

Midvale Steel & Ordnance Co., Widener Bldg., Philadelphia, Pa.

Mohawk—See Ludlum Steel Co.

Onondaga Steel Co., 1114 E. Water St., Syracuse, N. Y.

Red Cut Superior—See Vanadium-Alloys Steel Co.

Rex—See Crucible Steel Co. of America.

Roechling Electro Steel Co., 173-77 Lafayette St., New York, N. Y. (Importers.)

Rushitoff—See Fairley-Davidson Steel Co.

Star Zenith—See Carpenter Steel Co.

Toledo—See Andrew & Co.

Universal Steel Co., Bridgeville, Pa.

Urite—See Hercules Electric Steel Corp.

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Worcester, Massachusetts
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STEEL, High-Speed Cutting (Continued)

Vanadium-Alloys Steel Co., Pittsburgh, Pa. "Red Cut Superior."
Vulcan Crucible Steel Co., First St., Aliquippa, Pa.
Tusco—See United Alloy Steel Co.
Ward's Sons Co., Edgar T., Boston, Mass. (Importers.) (See page 925.)
X-tof—See Fairley-Davidson Steel Co.

STEEL LETTERS—See Stamps, Steel

STEEL, Manganese

American Manganese Steel Co., 322 S. Michigan Ave., Chicago, Ill.
McCord & Co., 122 S. Michigan Ave., Chicago, Ill.
Universal Steel Co., Bridgeville, Pa.

STEEL MATS FOR FORDS—See Mats, Floor Board

STEEL MOLDING—See Molding, Steel

STEEL, Nickel

Aegis—See United Alloy Steel Co.
Agathon—See Central Steel Co.
Allen & Co., Edgar, 713 W. Lake St., Chicago, Ill. (Importers.)
Andrews Steel Co., Ninth & Lowell Sts., Newport, Ky.
Arrow—See Crowley Co.
Becker Steel Co. of America, 154 Nassau St., New York, N. Y. (Importers.)
Betz-Pierce Co., Cleveland, O. (Distributors.) (See page 915.)
Carbon Steel Co., ft. 32d St., Pittsburgh, Pa. "Nico."
Carnegie Steel Co., Carnegie Bldg., Pittsburgh, Pa.
Carpenter Steel Co., Reading, Pa.
Central Steel Co., Massillon, O. "Agathon."
Crowley, John A., 120-22 Liberty St., New York, N. Y. "Arrow."
Crucible Steel Co. of America, Oliver Bldg., Pittsburgh, Pa.
Electro Steel Co., Pittsburgh, Pa.
Fairley-Davidson Steel Co., 124 Maiden Lane, New York, N. Y. (Importers.) "Hehtemnd."
Frasse & Co., Peter A., 417-21 Canal St., New York, N. Y. (See page 279.)
Halcomb Steel Co., Syracuse, N. Y.
Hehtemnd—See Fairley-Davidson Steel Co.
Helmuth Co., L., 17 Battery Pl., New York, N. Y. (Importers.)
Illinois Steel Co., 208 S. La Salle St., Chicago, Ill.
Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill. (See page 915.)
La Salle Steel Co., 2305 S. Halsted St., Chicago, Ill.
Lindenberg Steel Co., 90 West St., New York, N. Y. (Importers.)
Midvale Steel & Ordnance Co., Widener Bldg., Philadelphia, Pa.
Nico—See Carbon Steel Co.
Pittsburgh Shafting Co. of Detroit, 1300 W. Fort St., Detroit, Mich.
Pittsburgh Tool Steel Wire Co., Monaca, Pa.
Tacony Steel Co. (Tacony), Philadelphia, Pa.
Union Drawn Steel Co., Beaver Falls, Pa. (See page 919.)
United Alloy Steel Co., Eighth St. Extension, Canton, O. "Aegis."
Universal Steel Co., Bridgeville, Pa.
Vulcan Crucible Steel Co., First St., Aliquippa, Pa.

STEEL NUMBERS—See Stamps, Steel

STEEL RING GEARS—See Gears, Steel Ring

STEEL, Self-Hardening Cutting

Allen & Co., Edgar, 713 W. Lake St., Chicago, Ill. (Importers.)
Argo—See Illingsworth Steel Co.
Blue Clip—See Firth-Sterling Steel Co.
Firth-Sterling Steel Co., McKeesport, Pa. "Blue Clip."
Halcomb Steel Co., Syracuse, N. Y.
Hobson, Houghton & Co., 33 Beekman St., New York, N. Y. (Importers.) "Soho."
Illingsworth Steel Co., John (Frankford), Philadelphia, Pa. "Argo."
Jessop & Sons, Wm., 91 John St., New York, N. Y. (Importers.)
Soho—See Hobson, Houghton & Co.
Vulcan Crucible Steel Co., First St., Aliquippa, Pa. "Wolfram."
Wolfram—See Vulcan Crucible Steel Co.

STEEL, Sheet

Allegheny Steel Co., Brackenridge, Pa.
American Rolling Mill Co., Middletown, O. "Middletown."
American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa. "Thurite." (See page 921.)
Apollo Steel Co., Apollo, Pa.
Betz-Pierce Co., Cleveland, O. (Distributors.) (See page 915.)
Brier Hill Steel Co., Stambaugh Bldg., Youngstown, O.
Crowley, John A., 120-22 Liberty St., New York, N. Y.
Electro Steel Co., Pittsburgh, Pa.
Falcon Steel Co., Niles, O.
Follansbee Bros. Co., Third & Liberty Aves., Pittsburgh, Pa.
Frasse & Co., Peter A., New York, N. Y. (New Jersey, Pennsylvania and New York Distributors for Griffin Steel.) (See page 279.)
Griffin Mfg. Co., 15th & Cherry Sts., Erie, Pa.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
La Belle Iron Works, Steubenville, O.
La Salle Steel Co., 2305 S. Halsted St., Chicago, Ill.
McCullough Iron Co., Wilmington, Del.
McVoy Sheet & Tin Plate Co., 344-50 W. Michigan St., Chicago, Ill.
Mahoning Valley Steel Co., Niles, O.
Mansfield Sheet & Tin Plate Co., Mansfield, O.
Massillon Rolling Mill Co., Massillon, O.
Middletown—See American Rolling Mill Co.
National Pressed Steel Co., Massillon, O. (See page 917.)
Newton Steel Co., Wick Bldg., Youngstown, O.
Seneca Iron & Steel Co., Buffalo, N. Y.
Simonds Mfg. Co., Lockport, N. Y. (See page 917.)

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Automobile Fender and Hood Stock
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Export Representatives: United States Steel Products Co., New York City

Pacific Coast Representatives: United States Steel Products Co., San Francisco, Los Angeles, Portland, Seattle

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STEEL, Sheet (Continued)

Taylor Co., N. & G., 308 Chestnut St., Philadelphia, Pa.
Thurite—See American Sheet & Tin Plate Co.
Universal Steel Co., Bridgeville, Pa.
Youngstown Sheet & Tube Co., Youngstown, O.

STEEL SHOP STOOLS—See Stools, Steel Shop

STEEL, Spring

Arrow—See Crowley Co.
Bethlehem Steel Co., Third & Poplar Sts., South Bethlehem, Pa.
Cambria Steel Co., Johnstown, Pa.
Carnegie Steel Co., Carnegie Bldg., Pittsburgh, Pa.
Carpenter Steel Co., Reading, Pa.
Crowley, John A., 120-22 Liberty St., New York, N. Y. "Arrow."
Crucia—See United Alloy Steel Co.
Crucible Steel Co. of America, Oliver Bldg., Pittsburgh, Pa.
Elastique—See United Alloy Steel Co.
Excelsior—See Fairley-Davidson Steel Co.
Fairley-Davidson Steel Co., 124 Maiden Lane, New York, N. Y. (Importers.) "Excelsior."
Frasse & Co., Peter A., 417-21 Canal St., New York, N. Y. (See page 279.)
Halcomb Steel Co., Syracuse, N. Y.
Harrow Spring Co.—See Steel Sales Co.
Helmuth Co., L., 17 Battery Pl., New York, N. Y. (Importers.)
Illinois Steel Co., 208 S. La Salle St., Chicago, Ill.
Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill. (See page 915.)
Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y.
La Salle Steel Co., 2305 S. Halsted St., Chicago, Ill.
Midvale Steel & Ordnance Co., Widener Bldg., Philadelphia, Pa.
Steel Sales Co., Jefferson & Adams Sts., Chicago, Ill. (Sole Distributors for Harrow Spring Co., Milwaukee, Wis.)
Tacony Steel Co. (Tacony), Philadelphia, Pa.
United Alloy Steel Co., Eighth St. Extension, Canton, O. "Crucia." "Elastique."
Universal Steel Co., Bridgeville, Pa.
Vulcan Crucible Steel Co., First St., Aliquippa, Pa.

STEEL STAMPINGS—See Stampings and Pressings, Metal

STEEL, TEE—See Steel, Angle

STEEL TESTING INSTRUMENTS—See Instruments, Metal Testing

STEEL, Tool

Allen & Co., Edgar, 718 W. Lake St., Chicago, Ill. (Importers.)
Andrew & Co., J. H., 26 Cortlandt St., New York, N. Y. (Importers.) "Toledo."
Argo—See Illingsworth Steel Co.
Arrow—See Crowley Co.
Atlas Crucible Steel Co., Dunkirk, N. Y. "Deward." (See page 915.)
Becker Steel Co. of America, 154 Nassau St., New York, N. Y. (Importers.)
Betz-Pierce Co., Cleveland, O. (Distributors.) (See page 915.)
Black Diamond—See Crucible Steel Co. of America.
Blancke Co., L. C., 10-12 Thomas St., New York, N. Y. (Sole Distributors for Blancke Steel Co., Taunton, Mass.)
Blancke Steel Co.—See Blancke Co.
Bohlers—See Houghton & Richards.
Bourne-Fuller Co., Hickox Bldg., Cleveland, O.
Brown & Co., Tenth St. & Duquesne Way, Pittsburgh, Pa.
Carbon Steel Co., ft. 32d St., Pittsburgh, Pa. "Weto," "Cromo."
Carnegie Steel Co., Carnegie Bldg., Pittsburgh, Pa.
Carpenter Steel Co., Reading Pa.
Colonial Steel Co., 324 Fourth Ave., Pittsburgh, Pa. "Red Star."
Columbia Tool Steel Co., 14th & Butterfield Sts., Chicago Heights, Ill.
Connecticut Electric Steel Co., 540 Flatbush Ave., Hartford, Conn. "Phillipsite."
Crescent—See Crucible Steel Co. of America.
Cromo—See Carbon Steel Co.
Crowley, John A., 120-22 Liberty St., New York, N. Y. "Arrow."
Crucible Steel Co. of America, Oliver Bldg., Pittsburgh, Pa. "Black Diamond," "Crescent," "Sanderson."
Cyclops Steel Co., 265 E. Spring St., Titusville, Pa.
Dannemora—See Nash Co.
Deward—See Atlas Crucible Steel Co.
Eagle—See Le Moyne Steel Co.
Electro Steel Co., Pittsburgh, Pa.
Fairley-Davidson Steel Co., 124 Maiden Lane, New York, N. Y. (Importers.) "Fondwot."
Firth-Sterling Steel Co., McKeesport, Pa.
Fondwot—See Fairley-Davidson Steel Co.
Frasse & Co., Peter A., 417-21 Canal St., New York, N. Y. (See page 279.)
General Steel Co., Public Service Bldg., Milwaukee, Wis. "Gosgrow."
Gosgrow—See General Steel Co.
Halcomb Steel Co. of Syracuse, N. Y. "Ketos."
Hammond Steel Co., 2600 Milton Ave., Syracuse, N. Y.
Heller Bros. Co., 865 Mt. Prospect Ave., Newark, N. J.
Hess Steel Corp., Baltimore, Md.
Hobson, Houghton & Co., 83 Beekman St., New York, N. Y. (Importers.)
Houghton & Richards, 145 Oliver St., Boston, Mass. "Bohlers."
Illingsworth Steel Co., John (Frankford), Philadelphia, Pa.
Jessop & Sons, Wm., 91 John St., New York, N. Y. (Importers.)
Ketos—See Halcomb Steel Co.
Lancaster Steel Products Co., Manheim Pike, Lancaster, Pa.
Latrobe Electric Steel Co., Latrobe, Pa.
Le Moyne Steel Co., Park Bldg., Pittsburgh, Pa. "Eagle."
Lindenberg Steel Co., 90 West St., New York, N. Y. (Importers.)
Ludlum Steel Co., Watervliet, N. Y. "Pompton," "Seminole."
McInnes Steel Co., Corry, Pa.
Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y.
Midvale Steel & Ordnance Co., Widener Bldg., Philadelphia, Pa.
Phillipsite—See Connecticut Electric Steel Co.
Pittsburgh Tool Steel Wire Co., Monaca, Pa.
Pompton—See Ludlum Steel Co.
Red Star—See Colonial Steel Co.

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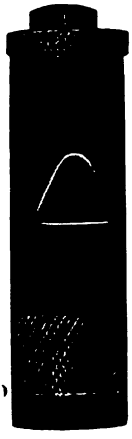

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STEEL, Tool (Continued)

Roechling Electro Steel Co., 173-77 Lafayette St., New York, N. Y. (Importers.)
Sanderson—See Crucible Steel Co. of America.
Seminole—See Ludlum Steel Co.
Tacony Steel Co. (Tacony), Philadelphia, Pa.
Toledo—See Andrew & Co.
Trojan Electric Steel Co., 34th St. and Hoyne Ave., Chicago, Ill.
Universal Steel Co., Bridgeville, Pa.
Vanadium-Alloys Steel Co., Pittsburgh, Pa. "Vasco."
Vasco—See Vanadium-Alloys Steel Co.
Vulcan Crucible Steel Co., First St., Aliquippa, Pa.
Ward's Sons Co., Edgar T., Boston, Mass. (Importers.) "Dannemora." (See page 925.)
Weto—See Carbon Steel Co.

STEEL TUBE—See Tubing, Steel

STEEL, Vanadium

Agathon—See Central Steel Co.
Allen & Co., Edgar, 713 W. Lake St., Chicago, Ill. (Importers.)
Alva—See Crucible Steel Co. of America.
Andrews Steel Co., Ninth & Lowell Sts., Newport, Ky.
Arrow—See Crowley Co.
Betz-Pierce Co., Cleveland, O. (Distributors.) (See page 915.)
Carnegie Steel Co., Carnegie Bldg., Pittsburgh, Pa.
Central Steel Co., Massillon, O. "Agathon."
Crowley, John A., 120-22 Liberty St., New York, N. Y. "Arrow."
Crucible Steel Co. of America, Oliver Bldg., Pittsburgh, Pa. "Alva."
Fairley-Davidson Steel Co., 124 Maiden Lane, New York, N. Y. (Importers.) "Hehtemnd."
Halcomb Steel Co., Syracuse, N. Y.
Harrow Spring Co.—See Steel Sales Co.
Hehtemnd—See Fairley-Davidson Steel Co.
Hercules Electric Steel Corp., 137-43 Lafayette St., New York, N. Y. "Urite."
Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill. (See page 915.)
La Salle Steel Co., 2305 S. Halsted St., Chicago, Ill.
Ludlum Steel Co., Watervliet, N. Y.
McInnes Steel Co., Corry, Pa.
Midvale Steel & Ordnance Co., Widener Bldg., Philadelphia, Pa.
National Drawn Steel Co., East Liverpool, O.
Pittsburgh Tool Steel Wire Co., Monaca, Pa.
Steel Sales Co., Jefferson & Adams Sts., Chicago, Ill. (Sole Distributors for Harrow Spring Co., Milwaukee, Wis.)
Union Drawn Steel Co., Beaver Falls, Pa. (See page 919.)
United Alloy Steel Co., Eighth St. Extension, Canton, O.
Urite—See Hercules Electric Steel Corp.
Vanadium-Alloys Steel Co., Pittsburgh, Pa. "Vasco."
Vasco—See Vanadium-Alloys Steel Co.
Vulcan Crucible Steel Co., First St., Aliquippa, Pa.

STEEL WASHERS—See Washers, Iron

STEEL WHEEL RIMS, AIRPLANE—See Rims, Airplane Wheel

STEEL WHEELS—See Wheels, Cast Steel; also Wheels, Pressed and Wrought; also Wheels, Tractor Steel

STEEL WIRE—See Wire

STEEL WIRE BROOMS—See Brooms, Steel Wire

STEEL WOOL—See Wool, Steel

STEERING APPARATUS — See Gears, Steering

STEERING COLUMN BRACES FOR FORDS —See Braces, Steering Column

STEERING COLUMN CONTROLS—See Controls, Dash and Steering Column Carburetor

STEERING COLUMN SILENCERS FOR FORDS—See Braces, Steering Column

STEERING CONNECTIONS—See Connections, Steering

STEERING CONNECTIONS FOR FORDS —See Links, Steering

STEERING DEVICES—See Checks, Steering Gear

STEERING GEAR CHECKS—See Checks, Steering Gear

STEERING GEAR LOCKS FOR FORDS—See Locks, Steering Gear

STEERING GEAR STEADYING DEVICES —See Checks, Steering Gear

STEERING GEAR STOPS—See Stops, Steering Gear

STEERING GEAR STRUTS—See Checks, Steering Gear

STEERING GEARS—See Gears, Steering

STEERING GUIDES, TRACTOR—See Guides, Tractor Steering

STEERING KNUCKLE BOOTS—See Boots, Steering Knuckle

STEERING KNUCKLE BUSHING MILLS FOR FORDS — See Mills, Steering Knuckle Bushing

STEERING KNUCKLES — See Forgings, Drop

STEERING LINKS FOR FORDS—See Links, Steering

STEERING RINGS, QUICK DETACHABLE TRACTOR—See Rings, Tractor Quick Detachable Steering

STEERING ROD SILENCERS FOR FORDS —See Anti-Rattlers, Steering Rod

STEERING RODS FOR FORDS — See Links, Steering

STEERING WHEEL CLOCKS FOR FORDS —See Clocks, Steering Wheel

STEERING WHEEL COVERS—See Covers, Steering Wheel Rim

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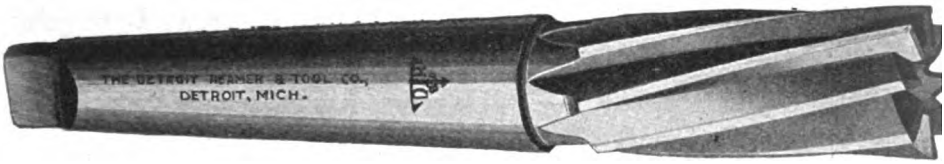

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DETROIT, MICHIGAN

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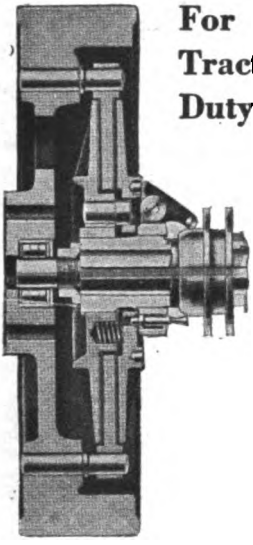

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Carries Two Tires
Makes Them Theftproof

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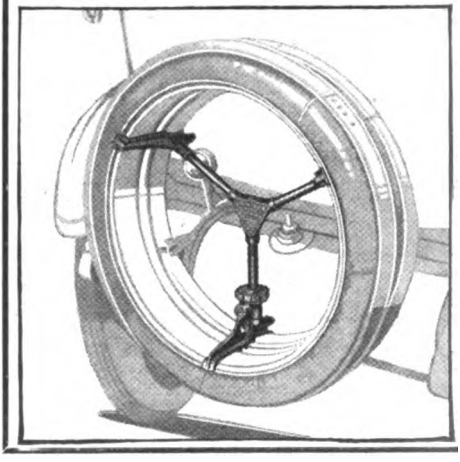

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STEERING WHEEL LOCKS — See Locks, Steering Wheel

STEERING WHEEL RIMS—See Rims, Wood Steering Wheel; also Rims, Rubber Steering Wheel

STEERING WHEEL SWITCHES — See Switches, Steering Wheel

STEERING WHEELS—See Wheels, Steering

STEERING WHEELS, ELECTRICALLY HEATED—See Warmers, Hand

STEM ADJUSTERS—See Adjusters, Valve Stem

STEP BOLTS—See Bolts, Machine and Carriage

STEP HANGERS—See Hangers, Pressed Steel Step

STEP MATS—See Mats, Running Board

STEP PLATES—See Plates, Heel, Pedal or Step

STEPS, FORGED—See Forgings, Drop

STEPS AND RUNNING BOARDS—See Boards, Running

STERN BEARINGS, MOTOR BOAT—See Bearings, Motor Boat Stern

STETHOSCOPES, MOTOR TESTING—See Instruments, Engine Testing

STICKS, AIRPLANE—See Parts, Wood

STILLS, Water

(For distilling water for use in storage batteries)

Ballman-Whitten Mfg. Co., 4015 Laclede Ave., St. Louis, Mo.

Barnestead Still & Sterlizer Co., 2 Lanesville Terrace (Forest Hills), Boston, Mass.

Boulton-Perrigo Mfg. Co., 1126 W. Second St., Oklahoma City, Okla. "Wampus Kat."

Eureka—See Lattner Mfg. Co.

Genco—See General Scientific Equipment Co.

General Scientific Equipment Co. (North Philadelphia), Philadelphia, Pa. "Genco."

Kline, Maurice, 3216 N. Newkirk St., Philadelphia, Pa.

Lalor Co., W. M., 431 S. Dearborn St., Chicago, Ill. "Rochlitz."

Latimer Mfg. Co., Ludington, Mich.

Lattner Mfg. Co., P. M., 515 F Ave., W., Cedar Rapids, Iowa. "Eureka."

Link Co., A. P., 228 78d St., Brooklyn, N. Y.

Precision Steam Meter Co., 820-22 S. Tripp Ave., Chicago, Ill.

Reliable Mfg. Co., 2819 Prospect Ave., Cleveland, O.

Rochlitz—See Lalor Co.

Sargent Steam Meter Co., 800-02 Sibley St., Chicago, Ill.

Shonts Co., H. B., 157 W. 54th St., New York, N. Y. (See page 733.)

Standard Water Systems Co., Hampden, N. J. "Tripure."

Stokes Machine Co., F. J., 17th & Cambria Sts., Philadelphia, Pa.

Tripure—See Standard Water Systems Co.

Wampus Kat—See Boulton-Perrigo Mfg. Co.

STITCHING MACHINES—See Machines, Double Tread Tire Stitching

STOCK RACKS—See Racks, Metal Tool

STOCKS, Die

Acme—See American Tap & Die Co.

Adamantine—See American Tap & Die Co.

American Tap & Die Co., Greenfield, Mass. "Acme," "Adamantine." (See page 927.)

Armstrong Mfg. Co., 335 Knowlton Ave., Bridgeport, Conn.

Besly & Co., Charles H., 118-24 N. Clinton St., Chicago, Ill.

Brubaker & Bros., W. L., 50 Church St., New York, N. Y. (See page 349.)

Butterfield & Co. (Division of Union Twist Drill Co.), Derby Line, Vt.

Card Mfg. Co., S. W., Mansfield, Mass.

Carpenter Tap & Die Co., J. M., Pawtucket, R. I.

Conant & Donelson Co., Conway, Mass. "Reliable."

Duplex—See Hart Mfg. Co.

Economy—See Greenfield Tap & Die Corp.

GTD—See Greenfield Tap & Die Corp.

Green River—See Greenfield Tap & Die Corp.

Greenfield Tap & Die Corp., Greenfield, Mass. "Little Giant," "Lightning," "Green River," "Economy," "G T D." (See page 927.)

Hart Mfg. Co., 2315-25 E. 20th St., Cleveland, O. "Duplex."

Lightning—See Greenfield Tap & Die Corp.

Little Giant—See Greenfield Tap & Die Corp.

Lowell Wrench Co., 54 Commercial St., Worcester, Mass.

Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 339.)

Reliable—See Conant & Donelson.

Thistle—See Winter Bros. Co.

Winter Bros. Co., Kendrick St., Wrentham, Mass. "Thistle."

STOCKS, TRANSMISSION DRUM FOR FORDS—See Holders or Stocks, Transmission Drum

STOOLS, STEEL SHOP

Angle Steel Stool Co., Otsego, Mich. "Otsteel."

Kalamazoo Steel Goods Co., Kalamazoo, Mich.

Manufacturing, Equipment & Engineering Co., Framingham, Mass.

New Britain Machine Co., Chestnut St., New Britain, Conn.

Otsteel—See Angle Steel Stool Co.

STOPPERS, GLARE—See Dimmers, Glare

STOPS, Pedal for Fords

(To automatically stop the throw of the pedal at the neutral point)

Porter Products Corp., 670 Keith Bldg., Syracuse, N. Y. (See page 599.)

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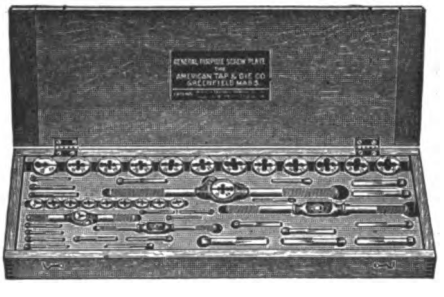

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STOPS, Ratchet, for Fords

(Ratchet stop to be applied to brake drums to prevent car rolling backward on steep grades)

Wayland Specialty Mfg. Co., Wayland, N. Y. (See page 399.)

STOPS, Steering Gear for Fords

(Device to prevent steering arm passing beyond center and locking when turning)

Stiles Mfg. Co., St. Louis, Mo. (See page 521.)

STORAGE BATTERIES — See Batteries, Storage

STORAGE BATTERY ACID—See Electrolyte, Storage Battery

STORAGE BATTERY BOXES—See Boxes, Metal Battery

STORAGE BATTERY CARRIERS — See Carriers, Storage Battery

STORAGE BATTERY CHARGERS — See Electrolyte, Storage Battery

STORAGE BATTERY CHARGING CLIPS See Clips, Electric Test; also Connectors, Storage Battery Charging

STORAGE BATTERY CHARGING CONNECTORS—See Connectors, Storage Battery Charging

STORAGE BATTERY CHARGING PLUGS —See Plugs, Charging

STORAGE BATTERY CONNECTOR DRILLS — See Drills and Bits, Battery Strap

STORAGE BATTERY CONNECTORS—See Connectors, Storage Battery

STORAGE BATTERY CONTROLLERS—See Controllers, Storage Battery

STORAGE BATTERY ELECTROLYTE—See Electrolyte, Storage Battery

STORAGE BATTERY FILLERS—See Fillers, Storage Battery

STORAGE BATTERY HANDLES — See Handles, Storage Battery

STORAGE BATTERY HOLDING DOWN CLAMPS—See Clamps, Storage Battery Holding Down

STORAGE BATTERY JARS—See Jars, Storage Battery

STORAGE BATTERY OPENING GENERATORS—See Steamers, Storage Battery Opening

STORAGE BATTERY PLATE PRESSES—See Presses, Storage Battery Plate

STORAGE BATTERY POST CUTTERS—See Tools, Storage Battery Repair

STORAGE BATTERY REPAIR PARTS — See Parts, Storage Battery Repair

STORAGE BATTERY REPAIR TOOLS—See Tools, Storage Battery Repair

STORAGE BATTERY SEPARATORS—See Separators, Storage Battery

STORAGE BATTERY STEAMERS — See Steamers, Storage Battery

STORAGE BATTERY TESTING INSTRUMENTS—See Instruments, Storage Battery Testing

STORAGE BATTERY THERMOSTATS—See Thermostats, Storage Battery

STORAGE BATTERY TONGS—See Tools, Storage Battery Repair

STORAGE BATTERY TURNTABLES—See Turntables, Storage Battery

STORAGE BATTERY VISES—See Vises, Storage Battery

STORAGE SYSTEMS—See Tanks and Systems, Gasoline Storage

STORAGE TANKS—See Tanks and Systems, Gasoline Storage

STOVE BOLTS—See Bolts, Stove

STOVES, Camp

American Gas Machine Co., 810 Clark St., Albert Lea, Minn. "Kampkook."

Anton & Ackerman Co., 132-34 Kansas Ave., Topeka, Kans.

Auto Camp Stove Co., 1420 Cass St., Fort Wayne, Ind.

Auto-Kamp Equipment Co., 2008 Sheridan Ave., Saginaw, Mich. "Kamp Kook."

Baker-Lockwood Mfg. Co., 618 Delaware St., Kansas City, Mo.

Enterprise Mfg. Co., Bowery & Center Sts., Akron, O.

Kamp Kook—See Auto-Kamp Equipment Co.

Kampkook—See American Gas Machine Co.

Kampkook—See Phoenix Tent & Awning Co.

Mazura Mfg. Co., 313 S. Sixth St., St. Louis, Mo.

Moats—See Prentiss-Wabers Stove Co.

Phoenix Tent & Awning Co., First & Monroe Sts., Phoenix, Ariz. "Kampkook."

Prentiss-Wabers Stove Co., 35 Spring St., Grand Rapids, Wis. "Moats."

Prest-O-Lite Co., 30 E. 42d St., New York, N. Y. (See page 1221.)

Stanley Skid Chain Co., Boone, Iowa. (See page 679.)

Umbrella Camp Stove Co., Mount Vernon, Wash.

STRAIGHTENING BARS, AXLE—See Bars, Axle Straightening

STRAIGHTENING MACHINES — See Machines, Leaf Spring Straightening

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WE have acquired a knowledge that can only be obtained from experience, and this accounts for the excellence, uniformity of temper, exactness of size and finish of our springs. Knowledge of material, improved machinery, experienced workmen and care in testing our work before delivery, are the prime reasons why our springs are used by the leading concerns throughout the country.

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STRAIGHTENING PRESSES—See Presses, Bench Straightening

STRAIGHTENING TOOLS—See Tools, Fender Straightening

STRAINERS, CARBURETOR INTAKE—See Cleaners, Air

STRAINERS or SEPARATORS, Gasoline

(For use between tank and carburetor to remove dirt and water; for Strainer Funnels—See Funnels, or Measures, Metal)

Allen Wrench & Tool Co., Public & Eddy Sts., Providence, R. I.

American Brass & Iron Co., Detroit, Mich. (See page 205.)

Anthony Co., 138 West Ave., Long Island City, N. Y. (See page 747.)

Atkins Co., E. G., 26 E. Sixth St., Mansfield, O.

Attwood Brass Works, Grand Rapids, Mich. (See page 1195.)

Automotive Mfg. Corp., Strauss Bldg., Chicago, Ill.

Automotive Material Co., Chicago, Ill. "Automat-Co." (See page 1117.)

Automotive Specialties Mfg. Co., 6 N. Clark St., Chicago, Ill. "Wetherholt."

Beneke & Kropf Mfg. Co., 2559 W. 21st St., Chicago, Ill. "Rayfield." (See page 193.)

Bousman Mfg. Co., 1157 Plainfield Ave. N. E., Grand Rapids, Mich. "Grand Rapids."

Breeze Mfg. Co., 255 South St., Newark, N. J.

Bush Mfg. Co., Hartford, Conn. (See page 797.)

Colador Engineering Corp., 276 Jackson Ave., Long Island City, N. Y.

Columbia Gasoline Filter Co., 28 Kingston St., Boston, Mass.

Commonwealth Brass Corp., Detroit, Mich. (See page 1139.)

Davidson, F. J., 9688 Prairie Ave., Detroit, Mich. "Phillips." (See page 675.)

Eisenbrandt, F. B., Light St., Baltimore, Md. "Practical."

Gas-Co-later—See Visible Gasoline Filter Co.

Grand Rapids—See Bousman Mfg. Co.

Halladay Co., L. P., 501 N. Monroe St., Streator, Ill.

Hancock Mfg. Co., 802 E. Henry St., Charlotte, Mich.

Holtzer-Cabot Electric Co., 125 Armory St., Boston, Mass.

Holtzer-Cabot Electric Co., 125 Armory St., Boston, Mass.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Juhasz Carburetor Co., 244 W. 49th St., New York, N. Y.

Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O. "Trusty."

McRae & Roberts Co., 100-116 S. Campbell Ave., Detroit, Mich.

Michigan Lubricator Co., Detroit, Mich. (See page 259.)

Michigan Wire Cloth Co., 2100 Howard St., Detroit, Mich.

National Automotive Mfg. Co., 822 Champlain Ave., N. W., Cleveland, O.

National Gauge & Equipment Co., La Crosse, Wis. (See page 437.)

National Separator & Machine Co., 89 State St., Boston, Mass. "Springfield."

Parsons Mfg. Co., 5301-47 Bellevue Ave., Detroit, Mich.

Powell Co., Wm., 2525 Spring Grove Ave., Cincinnati, O.

Practical—See Eisenbrandt, F. B.

Rayfield—See Beneke & Kropf Mfg. Co.

Ro-Gas-Filter—See Roll Mfg. Co.

Roberts Brass Mfg. Co., 5401 W. Fort St., Detroit, Mich.

Roll Mfg. Co., Macy St., Fond du Lac, Wis. "Ro-Gas-Filter." (See page 931.)

Romul Mfg. Co., 692 Lenox Ave., New York, N. Y.

Sage Bros., 780 Union St., Brooklyn, N. Y. "Sasco." (See page 931.)

Sasco—See Sage Bros.

Springfield—See National Separator & Machine Co.

Sterling & Skinner Mfg. Co., 2672 E. Grand Blvd., Detroit, Mich.

Storm Mfg. Co., Dept. L., Minneapolis, Minn. (See page 983.)

Stromberg Motor Devices Co., Dept. 1020, 64 E. 25th St., Chicago, Ill. (See page 195.)

Trusty—See Lunkenheimer Co.

Visible Gasoline Filter Co., 1426 Wabash Ave., Chicago, Ill. "Gas-co-later." (See page 931.)

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

Wetherholt—See Automotive Specialties Mfg. Co.

Wheeler-Schebler Carburetor Co., Indianapolis, Ind. (See page 199.)

STRAINERS or SEPARATORS, Motorcycle Gasoline

Standard Thermometer Co., 65 Shirley St., Roxbury, Mass. (See page 883.)

STRAINERS, Radiator and Tank Filler

(Strainer baskets of woven wire for use in fuel and oil tanks and radiators)

Industrial Electric Mfg. Co., Wayne, Mich. (See page 733.)

Multi-Metal Co., 251 W. 19th St., New York, N. Y.

STRAINERS, TANK—See Strainers, Radiator and Tank

STRAP BUCKLES—See Buckles, Strap

STRAP LOOPS—See Loops, Brass Snap

STRAP SNAPS—See Hooks, Snap

STRAPS, Anti-Rattling Hood

(Leather or web straps with spiral spring to put over engine hoods to prevent their rattling)

Bentlin Co., Julius J., Cincinnati, O. (See page 505.)

Campbell—See Perkins Campbell Co.

Detroit Leather Works, 863 E. Lafayette Blvd., Detroit, Mich. (See page 125.)

Empire Weaving & Belting Corp., East Rochester, N. Y. "Tuftex."

Leather Parts Co., 1619-21 Prospect St., Indianapolis, Ind.

Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. "Campbell." (See page 317.)

Rose Mfg. Co., Frank, Hastings, Neb. (See page 751.)

Tuftex—See Empire Weaving & Belting Corp

STRAPS, HOOD—See Straps, Anti-Rattling Hood; also Straps, Leather

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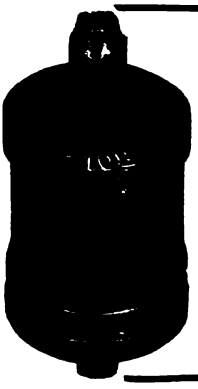

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The Ro-Gas-Filter is a device of brass and glass, easily attached on the feed line of any car or truck. The Ro-Gas-Filter will remove all water and other impurities from any gas. Now in use on many cars. Popular Low Price.

Its use increases the power and lowers operating cost. Attractive dealer proposition and descriptive matter on request.

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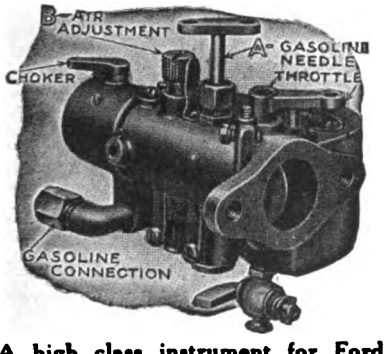

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A positive automatic chamois filter

Eliminates carburetor trouble. Pays for itself. A necessity today because the gas you are buying contains just the foreign substance that creates trouble, aggravation and expense and automobile accessory.

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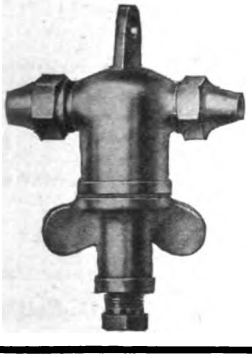

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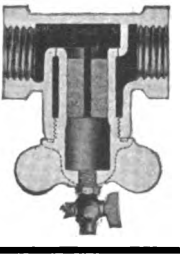

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STRAPS, Leather

Almco—See Auto Leather Mfg. Co.

Auto Leather Mfg. Co., Arlington, N. J. "Almco," "Kaenjay." (See page 133.)

Avey Leather Goods Mfg. Co., 904-10 Evans St., Cincinnati, O.

B. E. Mfg. Co., 18 W. 18th St., New York, N. Y. "Bemco." (See page 321.)

Backstay Machine & Leather Co., Oak & Howard Sts., Union City, Ind.

Badger Handle Co., 415-19 Third St., Milwaukee, Wis.

Bailey-Fitwell Co., 1318 S. Grand Ave., Los Angeles, Cal. "Fitwell."

Bantlin Co., Julius J., Cincinnati, O. (See page 505.)

Bemco—See B. E. Mfg. Co.

Bond Co., Charles, 520 Arch St., Philadelphia, Pa. "Fabritex."

Boston Leather Specialties, 30 Merrimac St., Boston, Mass.

Bunge Co., Otto, 1052 Dawson St., Indianapolis, Ind.

Campbell—See Perkins, Campbell Co.

Carter Co., George R., Connersville, Ind.

Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.

Decker, J. C., Montgomery, Pa.

Deford Co., 729 Atlantic Ave., Boston, Mass.

Desoco—See Detroit Socket Co.

Detroit Leather Works, 863 E. Lafayette Blvd., Detroit, Mich. (See page 125.)

Detroit Socket Co., 2744 W. Jefferson Ave., Detroit, Mich. "Desoco."

Duckwall Belting & Hose Co., 201-05 N. West St., Indianapolis, Ind. (See page 637.)

Economy Stay Co., Jefferson City, Mo.

Evans-Lawrie Co., 708-10 Beacon St., Boston, Mass. (Eastern Distributors for "G & K" Straps.) (See page 125.)

Fabritex—See Bond Co.

Feeser Co., Frank S., 1102 Prospect St., Indianapolis, Ind. "Superior."

Fitwell—See Bailey-Fitwell Co.

G. & K.—See Graton & Knight Mfg. Co

General Tanning Corp., Chester, Mt. Vernon & Medborn Aves., Irvington, N. J.

Gilmer Co., L. H., Philadelphia, Pa. (See page 123.)

Graton & Knight Mfg. Co., Worcester, Mass. "G & K." (See page 119.)

Hager & Son, Chas., 1926 Broadway, New York, N. Y.

Hide Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind. (See page 121.)

Hildrick, Thomas H., 144 Chambers St., New York, N. Y.

Hoffeld & Co., R., 61-69 Carroll St., Buffalo, N. Y.

Hunt Co., Henry C., 261 Franklin St., Boston, Mass. (See page 117.)

Hutchinson Bros. Cut Leather Co., 1926 W. Eighth St., Cincinnati, O.

Jewell Belting Co., 15 Trumbull St., Hartford, Conn.

Kaenjay—See Auto Leather Mfg. Co.

Kelley, A. F., 173 S. Main St., Providence, R. I.

Kerr Specialty Co., 12th St. & G. T. R. R., Detroit, Mich.

Kronauer & Co., Chas., 152 N. Desplaines St., Chicago, Ill.

Leather Parts Co., Gest & Evans Sts., Indianapolis, Ind.

Leather Products Co., 715 Carr St., Cincinnati, O.

Lefkowitz & Bro., L., 1 Greene St., New York, N. Y.

Modern Belt & Web Co., Emerson Tower Bldg., Baltimore, Md.

Mooney Belting Co., 344 W. Sixth St., Cincinnati, O.

Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 321.)

National Leather Co., 161 South St., Boston, Mass.

Neidhardt & Co., C., 31 N. Water St., Rochester, N. Y.

Page Belting Co., Concord, N. H.

Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. "Campbell." (See page 317.)

Powers Mfg. Co., Waterloo, Ia. (See page 593.)

Prince Auto Fabric Mfg. Co., 4101 Fort Hamilton Ave., Brooklyn, N. Y.

R-E—See Roose Mfg. Co.

Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.

Rhoads & Sons, J. E., 12 N. Third St., Philadelphia, Pa.

Roose Mfg. Co., 327-33 W. Main St., Louisville, Ky. "R-E." (See pages 129, 151, 325 and 327.)

Rose Mfg. Co., Frank, Hastings, Neb. (See page 751.)

Sage's Trunk & Leather Goods Co., 10 Washington St., N., Boston, Mass.

Specialty Harness Co., Dayton, Va.

Springfield Harness Co., 55-59 Dwight St., Springfield, Mass.

Stevens & Bro., A. A., 1234 Wabash Ave., Chicago, Ill.

Strecker Bros. Co., 117-19 Putnam St., Marietta, O.

Superior—See Feeser Co.

Sutherland Co., F. L., 139 Beaubien St., Detroit, Mich. (See page 803.)

Wakefield Sales Co., Trempealeau, Wis.

Wsco—See Williamsport Leather Goods Co.

Williamsport Leather Goods Co., 944 Nichols Pl., Williamsport, Pa. "Wsco."

Wing Co., Charles, Amesbury, Mass. (See page 1173.)

Winship, W. W., 71 Summer St., Boston, Mass.

STRAPS, Rebound

(See also Shock Absorbers; also Springs, Supplementary)

Badger Handle Co., 415-19 Third St., Milwaukee, Wis.

Buckeye—See Central Brass & Fixture Co.

Bunge Co., Otto, 1052 Dawson St., Indianapolis, Ind.

Carter Co., George R., Connersville, Ind.

Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."

Detroit Leather Works, 863 E. Lafayette Blvd., Detroit, Mich. (See page 125.)

Empire Weaving & Belting Corp., East Rochester, N. Y. "Tuftex."

Evans-Lawrie Co., 708-10 Beacon St., Boston, Mass. (Eastern Distributors for "G & K" Straps.) (See page 125.)

Feeser Co., Frank S., 1102 Prospect St., Indianapolis, Ind. "Superior."

G. & K.—See Graton & Knight Mfg. Co.

Geisel Co., Otto E., 3200-06 Oxford St., Philadelphia, Pa.

Gilmer Co., L. H., Philadelphia, Pa. (See page 123.)

Graton & Knight Mfg. Co., Worcester, Mass. "G & K." (See page 119.)

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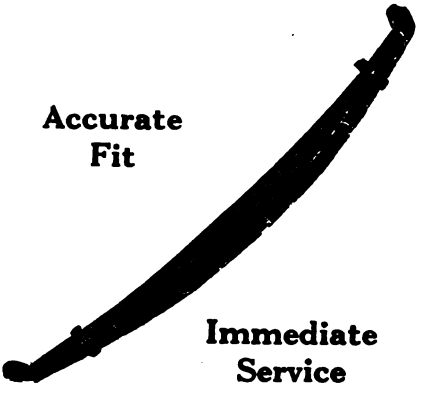

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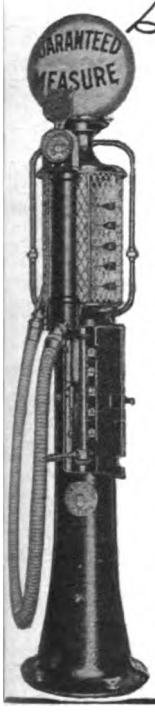

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It eliminates all power plants but one.

It doubles the speed of operation.
It is safe, simple and accurate.
It works automatically.

Filling stations equipped with Guarantee Visible Pumps are getting the business.

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REBOUND-SHOCK ABSORBER

One Model Spring Fits All Cars

Only one Model Spring is required to fit any Ford passenger car because the tension is adjustable to weight of the load. Less stock to carry, always the right type on hand, and a surer profit for dealers.

Burgess equipment performs the important functions of three types of shock absorbers combined, eliminating side-sway, keeping wheels on ground and silencing entire car.

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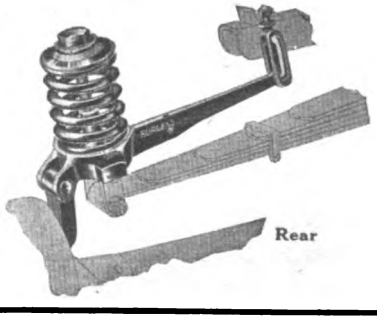

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STRAPS, Rebound (Continued)

Leather Parts Co., 1619-21 Prospect St., Indianapolis, Ind.

Mesinger Mfg. Co., H. & F., Austin Pl. & E. 144th St., New York, N. Y.

Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. (See page 317.)

Rose Mfg. Co., Frank, Hastings, Neb. (See page 751.)

Smith Belting Co., Manning J., 39 E. Ashmead St. (Germantown), Philadelphia, Pa. (See page 121.)

Superior—See Fesser Co.

Sutherland Co., F. L., 139 Beaubien St., Detroit, Mich. (See page 803.)

Tuftex—See Empire Weaving & Belting Corp.

STRAPS, Rebound, for Fords

(See also Shock Absorbers; also Springs, Supplementary)

Bantlin Co., Julius J., Cincinnati, O. (See page 505.)

Empire Weaving & Belting Corp., East Rochester, N. Y. "Tuftex."

Evans-Lawrie Co., 708-10 Beacon St., Boston, Mass. (Eastern Distributors for "G & K" Straps.) (See page 125.)

G. & K.—See Graton & Knight Mfg. Co.

Geisel Co., Otto E., 3200-06 Oxford St., Philadelphia, Pa.

Gilmer Co., L. H. Philadelphia, Pa. (See page 123.)

Graton & Knight Mfg. Co., Worcester, Mass. "G. & K." (See page 119.)

Mesinger Mfg. Co., H. & F., Austin Pl. & E 144th St., New York, N. Y.

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)

Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. (See page 317.)

Tuftex—See Empire Weaving & Belting Corp.

STRAPS, STARTING CRANK—See Holders, Starting Crank

STRAPS, STORAGE BATTERY REPAIR—See Parts, Storage Battery Repair

STRAPS, TIRE—See Straps, Leather; also Straps, Web

STRAPS, TOP—See Straps, Leather; also Straps, Web

STRAPS, Web

American Mills Co., of N. Y., 433 Broadway, New York, N. Y.

Avey Leather Goods Mfg. Co., 904-10 Evans St., Cincinnati, O.

Buffalo Weaving & Belting Co., Buffalo, N. Y. (See page 1059.)

Dafoe-Eustice Co., 4042 W. Jefferson Ave., Detroit, Mich. "Deco," "Ustus."

Deco—See Dafoe-Eustice Co.

Empire Weaving & Belting Corp., East Rochester, N. Y. "Tuftex."

Herman Mfg. Co., 1214 H St., N. W., Washington, D. C.

Hinson—See Powers Mfg. Co.

Manufacturing & Sales Corp., 40 Cedar St., New York, N. Y.

Modern Belt & Web Co., Emerson Tower Bldg., Baltimore, Md.

Powers Mfg. Co., Waterloo, Ia. "Hinson." (See page 593.)

Russell Mfg. Co., 508 Russell Ave., Middletown, Conn. (See page 121.)

Sutherland Co., F. L., 139 Beaubien St., Detroit, Mich. (See page 803.)

Tuftex—See Empire Weaving & Belting Corp.

Ustus—See Dafoe-Eustice Co.

STREAMLINING, Airplane Rubber Wire

Dural Rubber Corp., Maple Ave., Flemington, N. J.

Goodyear Tire & Rubber Co., Akron, O. (See page 1015.)

STRIP STEEL—See Steel, Cold Rolled Strip; also Steel, Hot Rolled Strip

STRIPS, Spring Leaf Lubricating

(Composition lubricating strips to place between spring leaves to prevent squeaking; for Spring Leaf Oilers—See Cups and Covers, Spring Leaf Lubricating; for Spring Leaf Separating Tools—See Tools, Spring Leaf Separating)

Avery—See Northwestern Chemical Co.

Avery Portable Lighting Co., 351 National Ave., Milwaukee, Wis.

Center-Fed Spring Insert Co., 404 Park Ave., Williamsport, Pa.

Cleveland Graphite-Bronze Co., Cleveland, O. (See page 179.)

Hall-Thompson Co., Dept. A., Hartford, Conn. "Wonder Worker." (See page 227.)

Merrill-Hamilton Co., S. W. Blvd. & Central St., Kansas City, Mo. "Springlife."

Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco," "Avery." (See page 277.)

Norwesco—See Northwestern Chemical Co.

Spiller Co., H. A., 55 Elm St., Boston, Mass "Springeze."

Springeze—See Spiller Co.

Springlife—See Merrill-Hamilton Co.

Wonder Worker—See Hall-Thompson Co.

STRIPS, Wind Shield Weather

Akron Auto Garage Co., 26 E. Buchtell St., Akron, O.

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 321.)

Badger Mfg. Corp., Milwaukee, Wis. (See page 173.)

Boston Woven Hose & Rubber Co., Cambridge, Mass.

Continental Rubber Works, 1902 Liberty St., Erie, Pa. "Vitalic."

Doerner & Co., 4127 32d St., Cincinnati, O. "Paragon."

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 545.)

Everware Rubber Co., 421 Oregon St., Milwaukee, Wis.

Hopewell Bros., Watertown, Mass. (See page 629.)

Industrial Rubber Goods Co., Broad St., St. Joseph, Mich. (See page 481.)

McCormick-Allmand—See Robinson Mfg. Co.

Motor Products Corporation, 11803 Mack Ave., Detroit, Mich. (See page 857.)

Paragon—See Doermer & Co.

Robinson Mfg. Co., Fourth & Jefferson Sts., Louisville, Ky. "McCormick-Allmand."

Sterling Top & Equipment Co., 518-22 W. 57th St., New York, N. Y.

Tatco—See Thomas Auto Top Co.

Thomas Auto Top Co., 417 E. Jackson St., Muncie, Ind. "Tatco."

Trico Products Corp., 624-28 Ellicott St., Buffalo, N. Y. "2-Way."

2-Way—See Trico Products Corp.

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Specially made in various styles and sizes for securely locking coil switches, gear shift levers, tool and battery boxes, tire holders, luggage boxes, trunks, etc.

Write for descriptive circulars, etc.

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STAINLESS STEEL

"Neither Rusts, Stains Nor Tarnishes"

WHY IT IS BETTER

Stainless is a high-chromium alloy steel, possessing two very important characteristics.

First: It has the strength and toughness of the best grades of heat-treated alloy steels, and will withstand exceedingly high temperatures while exposed to air and other gases, without scaling or pitting.

Second: Articles manufactured from Stainless Steel have the unique and useful property of withstanding the action of most of the common corrosive agents, without developing permanent stain.

Consequently, Stainless is of great value in the manufacture of valves, control apparatus, tools, dies, punches, moulds, etc. It may be forged, hardened, tempered, polished and annealed without radical departure from ordinary methods. The mechanical properties are such that, for machine parts, Stainless compares favorably with the best alloy steels, while its stainless quality adds a new value that is of decided interest to the automotive and mechanical engineer.

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Bethlehem Steel Company
Bethlehem, Pa.
Carpenter Steel Company
Reading, Pa.
Columbia Tool Steel Co.
Chicago Heights, Ill.
Crucible Steel Co., of America
Oliver Building, Pittsburgh
Firth-Sterling Steel Company
McKeesport, Pa.
Halcomb Steel Co.
Syracuse, N. Y.
Haynes & Son
Kokomo, Ind.
Hess Steel Corporation
Baltimore, Md.
Latrobe Electric Steel Company
Latrobe, Pa.
Midvale Steel & Ordnance Company
Widener Bldg., Philadelphia, Pa.
Simonds Manufacturing Co., Fitchburg, Mass.
Vanadium-Alloys Steel Company
Latrobe, Pa.
Vulcan Crucible Steel Company
Aliquippa, Pa.
Washington Steel & Ordnance Co.
Washington, D. C.

The AMERICAN STAINLESS STEEL COMPANY
1547 OLIVER BUILDING PITTSBURGH, PA.

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STRIPS, Wind Shield Weather (Continued)

Tyler Mfg. Co., 755 Boylston St., Boston, Mass. "Tymco."

Tymco—See Tyler Mfg. Co.

Vitalic—See Continental Rubber Works.

STRIPS, WOOD MOLDING — See Parts, Wood Automobile

STRIPS, WOOD TACKING — See Parts, Wood Automobile

STRUT ENDS, AIRPLANE—See Ends, Airplane Strut

STRUT FORMING MACHINES — See Lathes, Airplane Strut

STRUT LATHES, AIRPLANE—See Lathes, Airplane Strut.

STRUTS, AIRPLANE—See Parts, Wood

STRUTS, STEERING GEAR—See Checks, Steering Gear

STUD BOLT EXTRACTORS—See Extractors, Stud Bolt

STUFFING BOXES, MOTOR BOAT—See Boxes, Motor Boat Stuffing

SUIT CASE HOLDERS—See Holders, Suit Case or Luggage

SUN SHIELDS—See Shields, Sun

SUPPLEMENTARY RIMS—See Rims, Supplementary

SUPPLEMENTARY SEATS — See Seats, Supplementary

SUPPLEMENTARY SPRINGS—See Springs, Supplementary

SUPPLIES, Dealers and Jobbers in

(Comprising only Dealers and Jobbers in Automobile Supplies who advertise in this publication)

Auto Tire Sales Co., 1346-48 Michigan Ave., Chicago, Ill. (See page 143.)

Automotive Electrical Sales Co., 2637 S. Michigan Ave., Chicago, Ill. (See page 421.)

Beck & Corbitt, First, Ashley & O'Fallon Sts., St. Louis, Mo. (See page 629.)

Beckley-Ralston Co., Michigan Blvd. & 18th St., Chicago, Ill. (See page 61.)

Chicago Ignition Supply Co., 308 N. Michigan Ave., Chicago, Ill. (See page 1155.)

Electric Appliance Co., Chicago, Ill. (See page 539.)

Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass. (See page 417.)

Martin, Jas., 130-34 W. 52d St., New York, N. Y. (See page 629.)

Motor Electrical Equipment Co., 1251 S. Michigan Ave., Chicago, Ill. (See page 673.)

Paul-Irving Co., 1194-96 Bushwick Ave., Brooklyn, N. Y. (See page 677.)

Pruden Hardware Co., W. E., 864-66 Eighth Ave., New York, N. Y. (See page 1121.)

Reinhard Bros. Co., 11-13 S. Ninth St., Minneapolis, Minn. (See page 659.)

Warshawsky & Co., 1915-31 S. State St., Chicago, Ill. (See page 697.)

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (See pages 307 to 315.)

SUPPLIES, Foundry

Brass Founders Supply Co., 357 Wilson Ave., Newark, N. J.

Coleman Foundry Equipment Co., 2162-18 Abbey Ave., Cleveland, O.

Hill & Griffith Co., C. H. & D. Ry. & Gest St., Cincinnati, O.

Obermayer Co., S., 647 Ebans St., Cincinnati, O.

Stevens, Frederick B., Third & Larned Sts., Detroit, Mich.

Woodison Co., E. J., 7415 St. Aubin St., Detroit, Mich.

SUPPLY JOBBERS—See Jobbers, Supply

SUPPORTS, Brake Rods, for Fords

(To prevent rattling of brake rods)

Affa Specialty Co., 34 Southbridge St., Worcester, Mass.

Apco Mfg. Co., Providence, R. I.

Benford Auto Products, Mt. Vernon, N. Y.

Edelmann & Co., E., 2633 N. Crawford Ave. Chicago, Ill.

Hill, H. E., Galesburg, Mich.

Illinois Brass Mfg. Co., 224-30 W. Ontario St. Chicago, Ill.

Metal Stamping Co., 13th St. & East Ave. Long Island City, N. Y.

Mosco—See Motor Specialties.

Motor Specialties Co., Waltham, Mass. "Mosco."

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)

Republic Auto Parts Co., 31-35 Tenth St. Long Island City, N. Y.

Whitehouse Mfg. Co., 42 Elm St., Newark, N. J. (See page 637.)

SUPPORTS, CAR—See Jacks, Tire Saving

SUPPORTS, CRANK CASE REPAIR, FOR FORDS—See Brackets or Supports, Engine Repair

SUPPORTS, ENGINE REPAIR FOR FORDS —See Brackets or Supports, Engine Repair

SUPPORTS or ARCH BARS, Hood

(Formed metal bar or ledge to fasten to dash board to carry rear end of engine hood)

Crosby Co., Buffalo, N. Y. (See page 899.)

Hotchkiss Metal Form Co., 16 Jarvis St., Binghamton, N. Y. (See page 345.)

Kirk & Blum, 2346 Spring Grove Ave., Cincinnati, O.

Konigslow Mfg. Co., Otto, 3501 Perkins Ave., Cleveland, O.

Moline Pressed Steel Co., Fifth St., East Moline, Ill.

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SUPPORTS, RADIATOR, FOR FORDS—See Cradles, Radiator

SUPPORTS, RADIUS RODS FOR FORDS—See Rods, Radius

SUPPORTS, RUNNING BOARD FOR FORDS—See Braces, Running Board

SUPPORTS, Spring, for Fords

(Metal pad or support to be placed between spring and frame to prevent breaking of spring)

Boel Mfg. Co., Temple Ct. Bldg., Minneapolis, Minn. "Wilber."

Wilber—See Boel Mfg. Co.

SUPPORTS, Truck Body

(Supports or brackets for attaching body to frame)

C. M. & D.—See Chicago Mfg. & Distributing Co.

Chicago Mfg. & Distributing Co., 411 S. Sangamon St., Chicago, Ill. "C. M. & D."

Mayer Wagon Co., 6461 Frankstown Ave., E. E. Pittsburgh, Pa.

SURFACE GAGES—See Gages, Surface

SURFACE GRINDERS—See Grinders, Surface

SWEDGING PRESSES—See Presses, Bushing Swedging

SWING FRAME GRINDERS—See Grinders, Swing Frame

SWITCH CONTROLS FOR FORDS—See Controls, Ignition Switch

SWITCH KEYS FOR FORDS—See Keys, Switch

SWITCH LOCKS FOR FORDS—See Locks, Switch and Coil

SWITCHES, ELECTRIC LOCK — See Switches, Lock

SWITCHES, ELECTRIC LOCK, FOR FORDS—See Locks, Switch and Coil

SWITCHES, Electric Starter

(See also Starters, Electric)

Basco—See Briggs & Stratton Co.

Briggs & Stratton Co., 1047 Louis, Ave., Milwaukee, Wis. "Basco."

Cuno Engineering Corp., 80 S. Vine St., Meriden, Conn.

Diamond H.—See Hart Mfg. Co.

H & H—See Hart & Hegeman Mfg. Co.

Hart Mfg. Co., Hamilton St., Hartford, Conn. "Diamond H."

Hart & Hegeman Mfg. Co., 342 Capitol Ave., Hartford, Conn. "H & H"

Hartman Electrical Mfg. Co., 31 E. Fifth St., Mansfield, O.

I-C—See Industrial Controller Co.

Industrial Controller Co., 886 Greenbush St., Milwaukee, Wis. "I-C."

SWITCHES, Horn

(Special horn switch for attaching to steering column below the wheel and devised so it can be operated without removing the hands from the wheel)

Seng Auto Device Co., 1452 Dayton St., Chicago, Ill. (See page 609.)

SWITCHES, Ignition

(See also Switches, Steering Wheel)

Atwater Kent Mfg. Co., 4937 Stenton Ave., Philadelphia, Pa.

Basco—See Briggs & Stratton Co.

Briggs & Stratton Co., 1047 Louis Ave., Milwaukee, Wis. "Basco."

Brock Rubber Co., A. S., 100 Purchase St., Boston, Mass.

Chicago Electric Mfg. Co., 2817 S. Halsted St., Chicago, Ill. "Handy."

Clum Mfg. Co., 23-25 Erie St., Milwaukee, Wis.

Connecticut Telephone & Electric Co., Meriden, Conn.

Couch Co., S. H., 170 Purchase St., Boston, Mass. "Puritan."

Fahnestock Electric Co., Meadow St., Long Island City, N. Y.

Handy—See Chicago Electric Mfg. Co.

Hubbell, Harvey, State St. & Bostwick Ave., Bridgeport, Conn.

Jefferson Electric Mfg. Co., 426-30 S. Green St., Chicago, Ill.

Manhattan Electrical Supply Co., 17 Park Pl., New York, N. Y.

Morse, Frank W., 289 Congress St., Boston, Mass. (See page 549.)

Puritan—See Couch Co.

Quick Action Ignition Co., South Bend, Ind.

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco."

Splitdorf Electrical Co., 93 Warren St., Newark, N. J.

SWITCHES, KICK—See Switches, Ignition

SWITCHES, Light

(For turning on and off electric lights on car)

Aid Mfg. Co., 2625-31 Stewart Ave., Chicago, Ill. "Amco." (See page 547.)

Amco—See Aid Mfg. Co.

Basco—See Briggs & Stratton Co.

Briggs & Stratton Co., 1047 Louis Ave., Milwaukee, Wis. "Basco."

Brock Rubber Co., A. S., 100 Purchase St., Boston, Mass.

Chapman—See Morse, Frank W.

Chicago Electric Mfg. Co., 2817 S. Halsted St., Chicago, Ill. "Handy."

Clox-Lite Mfg. Co., 24 Scott St., Newark, N. J.

Clum Mfg. Co., 23-25 Erie St., Milwaukee, Wis.

Connecticut Telephone & Electric Co., Meriden, Conn.

Cowles & Co., C., New Haven, Conn. (See page 651.)

Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass.

Cuno Engineering Corp., 30 S. Vine St., Meriden, Conn.

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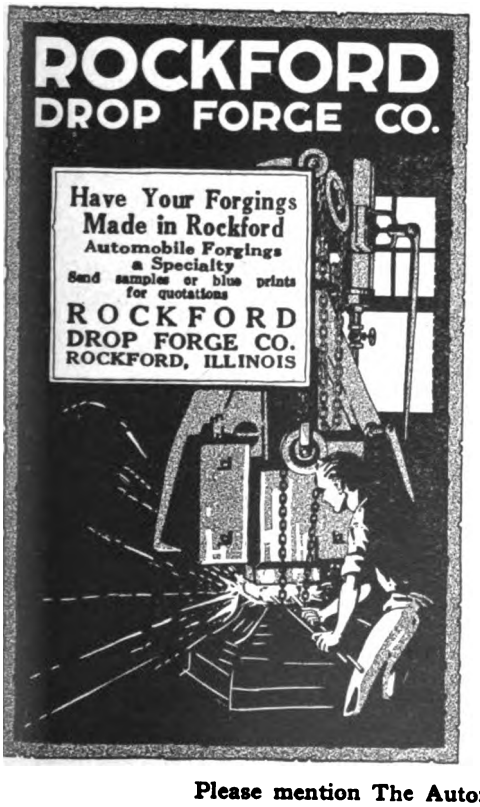

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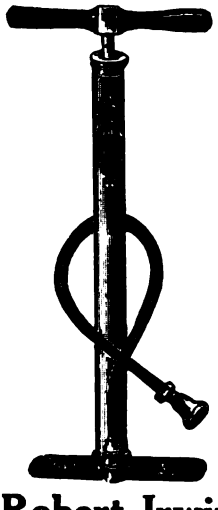

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1900 Euclid Ave.

Detroit, Michigan
1109 Kresge Bldg.

Chicago, Illinois
Conway Bldg.

Indianapolis, Ind.
1103 City Trust Bldg.

Service Stations

ALABAMA
Birmingham—Electric Garage & Repair Co., 2018½ Avenue B.
Mobile—Mobile Electric Garage, 204 North Royal Street.

ARIZONA
Globe—Western Machinery Co.
Nogales—Western Machinery Co.
Phoenix—Western Machinery Co.
Tuscon—Western Machinery Co.

ARKANSAS
Ft. Smith—Electric Service Co., 109 West 10th Street.
Hot Springs—Brown Electric Co.
Little Rock—Arkansas Battery Co., Inc., 414 Center Street.

CALIFORNIA
Bakersfield—Mongerson Elec. Machine Works, 2328 Chester Avenue.
El Centro—Electrical Service Co.
Exeter—Central Calif. Electric Co., Pine Street between D & E.
Frisco—Electric Laboratories, Inc., 1347 Van Ness Street.
Lindsay—Central Calif. Electric Co.
Long Beach—Automotive Electric Co., 227 East Broadway.
Los Angeles—Electric Equipment Co., 1240 South Hope Street.
Oakland—Auto Electric Service Co., 21st & Webster Streets.
Pasadena—Pasadena Battery & Ignition Co., 754 East Colorado Street.
Riverside—Haymond & Sands, 803 West 8th Street.
Sacramento—Sacramento Motor Service, 815 L Street.
San Diego—Auto Electric Equipment Co., 932 8th Street.
San Francisco—Automotive Service Agency, Van Ness & O'Farrell Sts.
San Jose—Auto Electric Service Co., 471 South 1st Street.
Santa Barbara—Santa Barbara Storage Battery Co., 8 West Sola Street.
Stockton—Wilson-Shultz & Co., Miner Avenue & San Joaquin Sts.
Tulare—Central Calif. Electric Co., 232 South K Street.
Visalia—Central Calif. Electric Co., 116 South Locust Street.

COLORADO
Colorado Springs—Cascade Auto Co., 115 North Cascade Avenue.
Denver—Electric & Service Eng. Co., 1313-1315 Broadway.

CONNECTICUT
Bridgeport—Electric Auto Service & Supply Co., 235 Cannon Street.
Hartford—Electric Parts & Service Co., 112 Ann Street.
New Haven—New Haven Electric Co., 254 Crown Street.
Stamford—Stamford Electric Contractor, Inc., 22 Atlantic Street.
Waterbury—Auto Electric Co., 71 Canal Street.

DELAWARE
Wilmington—Wilmington Storage Battery, 121 French Street.

DISTRICT OF COLUMBIA
Washington—Miller-Dudley Co., 1625 14th Street, N. W.

FLORIDA
Jacksonville—The Magneto Exchange, 223 West Adams Street.
Miami—Electrical Equipment Co., 312 13th Street.
Tampa—The Electric Service Co., Inc., 901-903 Florida Avenue.

GEORGIA
Atlanta—Paul D. O'Kelley Co., 45 Auburn Avenue.
Macon—Wade & Co., 566 Second Street.

IDAHO
Boise—Western Ignition & Battery Co., 119-121 South 11th Street.
Idaho Falls—Edwards-Warden Motor Parts Co.
Pocatello—Edwards-Warden Motor Parts Co., 541 East Center Street

ILLINOIS
Bloomington—Heerey & Moore, 519 N. Prairie Street.
Champaign—Paul J. Strable Co., 342 N. Hickory Street.
Chicago—Arthur Jones Electric Co., 2837 South State Street.
Decatur—Electric Service Co., 345 E. William Street.
Galesburg—Hoben & Marry, 136 S. Prairie Street.
Lincoln—United Battery & Electric Co., 614 Broadway.
Peoria—Electrical Testing Co., 300 Knoxville Avenue.
Springfield—Chapin Electric Garage, 407 E. Jackson Street.

INDIANA
Anderson—Fulwilder-Grimes Battery Co., 130 East 9th Street.
Elkhart—Auto Specialties Co., 221 Harrison Avenue.
Evansville—Automobile Electric Corp., 312-314 Water Street.
Ft. Wayne—Auto Electric Service Co., 213 West Main Street.
Indianapolis—Automotive Parts & Elec. Service Corp., 721 North Illinois Street.
Richmond—Chenoweth Electric Service Co., 1113 Main Street.
Burlington—Muren Electric Battery Works, 209 Division Street.
Cedar Rapids—Monroe Battery Co., 2nd and 4th Avenue.
Davenport—Johnson Motor Service Co., Front and Brady Streets.
Des Moines—Claiborne-Reno Co., 1023 Locust Street.
Ft. Dodge—The Auto Electric Service Co., 610 1st Avenue South.
Grinnell—Bidwell Electric Co.
Jefferson—W. H. Hamilton, 100 W Chestnut Street.
Ottumwa—Friday Battery & Elec Corp.
Sigourney—Friday Battery & Elec. Corp.
Sioux City—Arthur Electric Service Co., 715 Pearl Street.
Waterloo—Central Battery & Electric Co., 613 East Fifth Street.

KANSAS
Arkansas City—Mears Brothers, 407 S. Summit Street.
Atchison—C. C. Gerber, 112 North 7th Street.
Clay Center—Miller Co., 4th & Lincoln Streets.
Holton—Holton Battery & Starter Service.
Manhatton—Keele The Battery Man.
Salina—The Spray Electric Co.
Topeka—Keele Electric Co., 215 West 6th Street.
Wichita—E. S. Cowie Electric Co., 317-319 South Market.

KENTUCKY
Louisville—Rommel-Smith Motor Co., 901 East Broadway.

LOUISIANA
New Orleans—Subren, Inc., 1050 Carondelet Street.
Shreveport—The Southern Battery Co., 900 Texas Avenue.

MAINE
Bangor—Arvid L. Ebbeson, 225 Main Street.
Portland—L. W. Cleveland, 441-443 Congress Street.

MARYLAND
Baltimore—Automotive Engineering Co., 1727 North Charles Street.
Cumberland—The Automotive Repair Co., Front & Frederick Streets

MASSACHUSETTS
Boston—Chas. A. Jackson, Inc., 711 Beacon Street.
New Bedford—Auto Electric Service Station, 560 Pleasant Street.
Springfield—Krohnes Service Station, 61 Pecousic Street.
Worcester—Jenkins & Robinson, 69-75 Central Street.

MICHIGAN
Detroit—Auto Electric & Service Corp., 43-53 Selden Avenue.

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STARTING, LIGHTING & IGNITION EQUIPMENT

Flint—Flint Storage Battery & Electric Co., 118-120 East Union Street.
Grand Rapids—Leon S. Heth Co., 236 Ottowa Street, N. W.
Kalamazoo—Kalamazoo Storage Battery Co., 420 Main Street.

INNESOTA
Duluth—United Electric Service Co., 747 East Superior Street.
Minneapolis—Electric Magneto Co., 131 South 10th Street.

ISSISSIPPI
Jackson—Noel Repair Shop, 119 South Faust Street.

ISSOURI
Joplin—Sorber-Kuhn Auto Supply Co., 512 Joplin Street.
Kansas City—E. S. Cowie Electric Co., 1816 McGee Street.
Springfield—Sebree Battery & Electric Co., 451 St. Louis Street.
St. Joseph—Utz Electrical Shop, 12th & Farnon Street.
St. Louis—Automotive Electrical Service Co., Inc., 2199-31 Locust Street.

ONTANA
Billings—The Electric Service Station, Cor. 2nd and Utah Avenue.
Butte—McGrew Service Shop, Cor. 2nd and Utah Avenue.
Great Falls—Northwest Storage Battery Co., 410 First Avenue North.
Helena—Wm. E. Chase Co.
Lewistown—Electric Service Station, 110 4th Avenue.

EBRASKA
Hastings—United Electric Service Co., 817 West 3rd Street.
Lincoln—Randall & Noll, 317 South 11th Street.
Omaha—Auto Electric Service Co., 2205 Farnum Street.

EW JERSEY
Newark—Barber-Oppenheim, Inc., 243 Central Avenue.
New Brunswick—R. C. Bergen Co., Inc., 29 Albany Street.
Paterson—Magneto & Starter Repair Co., 233 Van Houten Street.
Trenton—J. Harry Hearnen, 105 S. Warren Street.

EW HAMPSHIRE
Manchester—Ernest E. Austin, 123 Canal Street.

EW YORK
Albany—Autoelectric Equipment Repair Co., 61 Central Avenue.
Binghampton—Elliott Engineering Co., 239 Water Street.
Middletown—Electric Auto Systems Service, Inc., 11 Center Street.
Brooklyn—P. J. Durham, 761 Park Place.
Buffalo—Meinhard Auto Supply Corp., 846 Main Street.
Jamestown—Lindquist Electric Co., 208 Washington Street.
New York—P. J. Durham Co., 244 West 49th Street.
Poughkeepsie—Pease Electric Service Co., 27 New Market Street.
Rochester—J. Lawrence Hill Co., 21-29 Plymouth Avenue.
Syracuse—Burr Fowler Co., 145 Seymour Street.
Utica—Steifvater Electric Co., Inc., 322 Lafayette Street.
Watertown—Ives Automotive Electric Service, 1313 State Street.

ORTH CAROLINA
Asheville—Asheville Battery Co., College and Market Streets.
Charlotte—Garretts Service Station, 327 East Trade Street.
Lumberton—Battery Service Co.

ORTH DAKOTA
Fargo—Fargo Plumbing & Heating Co., 123 Broadway.
Bismarck—Otto Diriam, 218 Main Street.

IIO
Akron—A. M. Allen Electric Co., 210 Water Street.
Canton—Moock Electric Supply Co.
Cincinnati—The Boyle Engineering Co., 2023 Reading Road.
Cleveland—The Bissinger Co., 2344 Euclid Avenue.
Columbus—The Bissinger Co., 118 East Springs Street.
Dayton—Herbert F. Apple, 427 East Third Street.
East Liverpool—Seedley Battery Co., 414 East 6th Street.
Lima—Beckman Electric Co., 124 South Central Avenue.
New Philadelphia—West End Garage, 726 West Fair Street.
Springfield—National Electric Co., 139 West Pleasant Street.
Tiffin—Flecks Electric Service Station, 89 Jefferson Street.
Toledo—Electric Power Maintenance Co., 11th and Monroe Streets.
Youngstown—Youngstown Auto Electric Co., 28 Pyatt Street.
Zanesville—Fergus Electric Co., 425 Main Street.

OKLAHOMA
Muskogee—Wood-Brison Battery Co., 440 West Broadway.
Oklahoma City—Johnson Electric Co., 718 North Broadway.
Tulsa—Walsh Electric Co., 919 South Main Street.

OREGON
Pendleton—William E. Chase Co., 320 East Court Street.
Portland—Electric Service Auto Co., 391 Oak Street.

PENNSYLVANIA
Allentown—Electric-Equipment & Service Co., 727 Linden Avenue.
Altoona—J. C. Muller Motor Co., Cor. 10th Avenue & 18th Street.
Erie—Electric Battery & Const. Co., 206 West 12th Street.
Harrisburg—Auto Electric Service Co., 17th & Kelly Streets.
Johnstown—Smith's Fireproof Garage, 208-210 Main Street
Lancaster—Electric Equipment Co., 44 North Prince Street.
Philadelphia—Auto Equipment Service Co., 1421 North Broad Street.
Pittsburgh—Penn Storage Battery Co., 5750 Baum Blvd.
Punxutawney—Jones Electrical Service Station, 225 West Liberty Street.
Reading—Berks Auto & Ignition Co., 514 Cherry Street.
Sharon—Sharon Auto Electric Service, 43 Vine Street.
Uniontown—Reed Automotive Service, 97 West Main Street.
Warren—The Post Office Garage, Market & Penna. Streets.
Wilkes-Barre—L. D. Rudolph-Litsee Elec. Co., 54 N. Main Street.

RHODE ISLAND
Providence—Magneto Parts Co. of R. I., 101 Fountain Street.

SOUTH CAROLINA
Charleston—The Gas Engine & Electric Co., 280 Meeting Street.
Columbia—Auto Electric Co., Inc., 1216 Hampton Avenue.
Greenville—Auto Elec. Co., 588 S. Main Street.
Greenwood—Auto Electric Co.

SOUTH DAKOTA
Aberdeen—Detwiler Auto Electric Service Co., 112 Third Avenue, S. W.
Sioux Falls—Auto Electric Service, Inc., 121 West 12th Street.
Watertown—Hansen Auto Electric Co., 319 Third Street.

TENNESSEE
Nashville—Automobile Electric Service Co., 1315 Broadway.
Knoxville—McNutt & Co., 317 W. Cumberland Ave.
Memphis—Bluff City Electric Co., Monroe Avenue at 4th Street.

TEXAS
Dallas—Otto A. Hille Co., 1711 Young Street.
El Paso—Western Battery & Magneto Co., Missouri & Kansas Streets.
Ft. Worth—Starter Service Co., 283 West 10th Street.
Houston—Tel Electric Co., 602 Preston Avenue.
Plainview—Conner-Mathes Co., 613 Austin Street.
San Angelo—Ragsdale Auto Supply Co., 8-10 Concho Street.
San Antonio—S. X. Callahan, North Flores Street.
Wichita Falls—Electric Service Station, 812 Scott Avenue.
Salt Lake City—Intermountain Electric Co., 43-59 East South Street.

VIRGINIA
Lynchburg—Lynchburg Battery Service Co., 63 Ninth Street.
Norfolk—Reliance Electric Co., 711 Grancy Street.
Richmond—W. M. Reynolds, Inc., 1839 W. Broad Street.

VERMONT
Burlington—Joe's Garage, 219 Main Street.

WASHINGTON
Seattle—Sunset Electric Co., 1508 Broadway.
Spokane—Washington Magneto Co., 218-220 Madison Street.
Tacoma—Tacoma Auto Electric Co., 705 Pacific Avenue.
Yakima—Hillman Electric Co.

WEST VIRGINIA
Clarksburg—The Electric Service Station, Modoc Street.
Wheeling—McKelvy-Ewing Electric Co., 937 Market Street.

WISCONSIN
Beloit—L. C. Fiske Electric Co., 417 East Grand Street.
Madison—Auto Electric Service Co., 124 West Main Street.
Milwaukee—Wisconsin Magneto Co., 528-530 Milwaukee Street.
Sheboygan—Acher Electrical Co., 606 North 8th Street.

CANADA
Calgary—Electric Service Co., Ltd.
Hamilton—Toronto & Hamilton Electric Co., Ltd., 103 McNab Street.
Montreal—International Electric Co., 97 Bleury Street.
Toronto, Ont.—Auto Electric Service Co., 8-10 Elm Street.
Quebec—Louis Lavoie, 173 Bridge Street.
Regina, Sask.—Motor Supplies, Ltd., 1822 Cornwall Street.
Saskatoon—Saskatoon Central Elec. Co.
Sherbrooke, Prov. Que.—Wiggett's Battery Service, 71 Wellington St.
Vancouver, B. C.—Electric Maintenance Co., 737 Pender Street.
Winnipeg, Manitoba—Lion's Auto Garage, Ltd., 230 Fort Street.

CUBA
Havana—Electric Equipment Co. Cuba, Galiamo—16.

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SWITCHES, Light (Continued)

Cutler Hammer Mfg. Co., 890 St. Paul Ave., Milwaukee, Wis.

Diamond H—See Hart Mfg. Co.

Eureka—See Morse, Frank W.

Faw, J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributor for Culver-Stearns Switches.) (See page 241.)

H & H—See Hart & Hegeman Mfg. Co.

Handy—See Chicago Electric Mfg. Co.

Hart Mfg. Co., Hamilton St., Hartford, Conn. "Diamond H."

Hart & Hegeman Mfg. Co., 342 Capitol Ave., Hartford, Conn. "H. & H."

Hartman Electrical Mfg. Co., 31 E. Fifth St., Mansfield, O.

Higginson-Gibson Mfg. Co., 76 Atherton St. (Jamaica Plain), Boston, Mass.

Hubbell, Harvey, State St. & Bostwick Ave., Bridgeport, Conn.

L-N—See Leece-Neville Co.

Leece-Neville Co., 5362 Hamilton Ave., Cleveland, O. "L-N."

Morse, Frank W., 289 Congress St., Boston, Mass. "Chapman," "Eureka," "Puritan." "Pullrite," "Starite." (See page 549.)

North East Electric Co., Dept. D, Rochester, N. Y. (See page 517.)

O'Brien Mfg. Co., Joseph F., 391 Broadway, New York, N. Y.

Pullrite—See Morse, Frank W.

Puritan—See Morse, Frank W.

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco."

Starite—See Morse, Frank W.

Westinghouse Electric & Mfg. Co., 82 Worthington St., Springfield, Mass. (See pages 940 and 941.)

SWITCHES, Lock

(Ignition switches equipped with lock to prevent unauthorized use of car)

American Devices Syndicate, 220 S. State St., Chicago, Ill. (See page 913.)

Bo-Hart Auto & Machine Co., Lancaster, N. Y.

Clum Mfg. Co., 23-25 Erie St., Milwaukee, Wis.

Connecticut Telephone & Electric Co., Meriden, Conn.

Cox Mfg. Co., 3138 Payne Ave., Cleveland, O. "Motolok." (See page 943.)

Davis—See National Auto Combination Lock Co.

Delta-Star Electric Co., 617-31 W. Jackson Blvd., Chicago, Ill.

Esco Mfg. Co., 228 Farnsworth St., Detroit, Mich.

Hubbell, Harvey, State St. & Bostwick Ave., Bridgeport, Conn.

Morkrum Co., 1410 Wrightwood Ave., Chicago, Ill.

Motolok—See Cox Mfg. Co.

National Auto Combination Lock Co., 3105 E. 14th St., Oakland, Cal. "Davis."

Scott Corp., 1534 W. Lake St., Chicago, Ill. "Telecator."

Telecator—See Scott Corp.

SWITCHES, LOCK, FOR FORDS — See Locks, Switch and Coil

SWITCHES, Spark Plug

(Small switches for attaching to spark plug to facilitate the testing of the ignition)

Bailey Co., W. J., Newark, N. J. "C. B."

C. B.—See Bailey Co.

Locke Mfg. Co., Ravenna, O.

Means, Eugene D., Towanda, Pa.

SWITCHES, Steering Wheel

(Ignition Switches for attachment to Steering Whe

Connecticut Telephone & Electric Co., Meriden, Conn.

Culver-Stearns Mfg. Co., 53 Grafton S Worcester, Mass.

Faw, J. H., 27 Warren St., New Yor N. Y. (Eastern and Southern Distributor for Culver-Stearns Switches.) (See page 241.)

SWIVEL JOINTS—See Joints, Speedomet Swivel

SWIVEL LAMPS—See Lights, Spot

SWIVEL LIGHTS—See Lights, Spot

SWIVEL SEARCHLIGHTS — See Ligh Spot

SYSTEMS, ACCOUNTING—See Books, A counting and Cost Systems

SYSTEMS, Battery Ignition

(See combined Ignition and Starting Systems See Starters, Electric Ignition; see also Coi Spark; also Timers.)

Akar Ignition Co., 157 W. Berkley St., Phil delphia, Pa.

Atwater Kent Mfg. Co., 4937 Stenton Av Philadelphia, Pa. "Unisparker."

Connecticut Telephone & Electric Co., Meriden, Conn.

Dayton Engineering Laboratories Co., 33 First St., Dayton, O. "Delco."

Delco—See Dayton Engineering Laboratori Co.

Kingston—See Kokomo Electric Co.

Kokomo Electric Co., 1450 N. Webster S Kokomo, Ind. "Kingston."

New York Coil Co., 338-40 Pearl St., New Yo N. Y. "Rhoades."

North East Electric Co., Dept. D., Roc ester, N. Y. (See page 517.)

Philbrin Corp., 507 S. Broad St., Kenne Square, Pa. (See page 1127.)

Remy Electric Co., 1623 E. Grand Blvd., D troit, Mich.

Rhoades—See New York Coil Co.

Unisparker—See Atwater Kent Mfg. Co.

Wagner Electric Mfg. Co., 6400 Plymou Ave., St. Louis, Mo.

Westinghouse Electric & Mfg. Co., Worthington St., Springfield, Mass. (See pages 940 and 941.)

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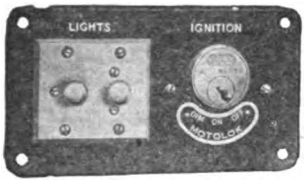
Motolok Ignition Control



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SCREW MACHINE PRODUCTS

OUR plant, newly equipped with highly accurate and very speedy machines, is specialized for the uninterrupted production of springs and screw machine products on a large scale.

We can handle promptly contracts for all kinds of springs up to ¼" stock, and screw machine products up to 1" in diameter in any quantity.

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We Have the Capacity

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COMPLETE FLYWHEELS ACCORDING TO YOUR SPECIFICATIONS

Send us your Drawings. It will pay you

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SYSTEMS, Battery Ignition, for Fords

(For combined ignition and starting systems—See Starters, Electric; also Coils, Spark; also Timers, Ignition)

Atwater Kent Mfg. Co., 4937 Stenton Ave., Philadelphia, Pa.

Connecticut Telephone & Electric Co., Meriden, Conn.

New York Coil Co., 238-40 Pearl St., New York, N. Y. "Rhodes."

Philbrin Corp., 507 S. Broad St., Kennett Square, Pa. (See page 1127.)

Rhoades—See New York Coil Co.

Westinghouse Electric & Mfg. Co., 82 Worthington St., Springfield, Mass. (See pages 940 and 941.)

SYSTEMS, BILLING—See Books, Accounting and Cost Systems

SYSTEMS, Chassis Lubricating

Advanced Products Corp., 1711 Vine St., Philadelphia, Pa. "Vanoiler."

Alemite—See Bassick Mfg. Co.

Bassick Mfg. Co., 361 W. Superior St., Chicago, Ill. "Alemite." (See page 945.)

Critz Mfg. Co., 1730 S. Los Angeles St., Los Angeles, Cal.

Essenkay Products Co., 220 W. Superior St., Chicago, Ill. "Mayer."

Grees Gun—See Ireland & Matthews Mfg. Co.

Ireland & Matthews Mfg. Co., Beard & Chatfield Sts., Detroit, Mich. "Grees Gun."

Mayer—See Essenkay Products Co.

Rhode Island Machine & Tool Co.—See Rimtco Lubricator Co.

Rimtco Lubricator Co., 739 Boylston St., Boston, Mass. (Sole Distributor for Rhode Island Machine & Tool Co., Woonsocket, R. I.) (See page 945.)

Roberts & Monroe, 35 Warren St., New York, N. Y. "Romon." (See page 359.)

Romon—See Roberts & Monroe.

Semco-Skelly—See Smith & Egge Mfg. Co.

Smith & Egge Mfg. Co., 556 Lafayette St., Bridgeport, Conn. "Semco-Skelly."

Vanoiler—See Advanced Products Corp.

SYSTEMS, Chassis Lubricating for Fords

Forc-Ful—See Zinke Co.

I. C. Mfg. Co.—See Zinke Co.

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for I. C. Mfg. Co., Chicago, Ill. "Forc-Ful.") (See page 315.)

SYSTEMS, COST—See Books, Accounting and Cost Systems

SYSTEMS, DRYING—See Rooms, Paint & Varnish Drying

SYSTEMS, Electric Lighting

(See also Dynamos, Electric Lighting; also Starters, Electric)

Dayton Engineering Laboratories Co., 329 E. First St., Dayton, O. "Delco."

Delco—See Dayton Engineering Laboratories Co.

Dyneto Electric Corp., Syracuse, N. Y. (See page 461.)

Gray & Davis, Boston, Mass. (See page 911.)

Holtzer-Cabot Electric Co., 125 Armory St., Boston, Mass.

Ita Manufacturers, Glen Ellyn, Ill.

L-N—See Leece-Neville Co.

Leece-Neville Co., 5363 Hamilton Ave., Cleveland, O. "L-N."

Leonard Electric Co., Ward, Mt. Vernon, N. Y.

North East Electric Co., Dept. D., Rochester, N. Y. (See page 517.)

Titan Engineering Co., 603 W. Pearl St., Union City, Ind.

Vesta Battery Corp., 2100 Indiana Ave., Chicago, Ill.

Westinghouse Electric & Mfg. Co., 82 Worthington St., Springfield, Mass. (See pages 940 and 941.)

SYSTEMS, GASOLINE FEED—See Tanks, Vacuum; also Systems, Magnetic Pump; also Regulators, Tank Pressure

SYSTEMS, GASOLINE STORAGE—See Tanks, Fuel Storage

SYSTEMS, IGNITION—See Coils, Spark; also Timers; also Magnetos; also Systems, Battery Ignition

SYSTEMS, KEROSENE, FOR FORDS—See Carburetors, Kerosene; also Heaters, Mixture; also Manifolds, Intake and Exhaust

SYSTEMS, LIGHTING—See Systems, Electric Lighting

SYSTEMS, LUBRICATING CHASSIS—See Systems, Chassis Lubricating

SYSTEMS, Magnetic Pump Gasoline

(For Vacuum Tanks—See Tanks, Vacuum)

Motor Cooling System Co., Charles & Lombard Sts., Baltimore, Md.

SYSTEMS, OIL—See Tanks and Systems, Oil

SYSTEMS, SINGLE SPARK IGNITION—See Systems, Battery Ignition

TABLES, LUNCH—See Tables, Picnic

TABLES, Picnic and Lunch

Affa Specialty Co., 34 Southbridge St., Worcester, Mass.

Baker-Lockwood Mfg. Co., 613 Delaware St., Kansas City, Mo.

Handy Pandy—See Pandolfo Mfg. Co.

Puffer-Hubbard Mfg. Co., 26th St. & 32d Ave. S., Minneapolis, Minn.

Pandolfo Mfg. Co., St. Cloud, Minn. "Handy Pandy." (See page 157.)

TACHOMETERS, Aircraft

(See also Counters, Revolution)

Electric Tachometer Co., Perry Bldg., Philadelphia, Pa. "Hopkins."

Hopkins—See Electric Tachometer Co.

Jones-Motrola, 29 W. 35th St., New York, N. Y.

Nelson Instrument Co., 7 Elkins St., Boston, Mass. "Reliance."

Reliance—See Nelson Instrument Co.

Rieker Instrument Co., 1919-21 Fairmount Ave., Philadelphia, Pa.

Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) (See page 301.)

Van Sicklen Co., Elgin, Ill. (See page 1105.)

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A high pressure system whereby all bearings can be efficiently lubricated in from 15 to 20 minutes.

We furnish over 300 different types and sizes of fittings, sufficient to meet all requirements of any make vehicles or machinery of kinds.

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Regular, size 2x5; capacity, ½ lb. grease
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When a bearing is lubricated in this thorough manner, experience has proved that it needs very little attention and less frequent lubrication. Because of these and many other valuable features, this RIMTCO LUBRICATING SYSTEM is worth many times over its cost.

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Absolute Lubrication—Abolishes Grease Cups

A uniform method whereby all bearings can be thoroughly lubricated in from fifteen to twenty minutes, without soiling hands or clothing.

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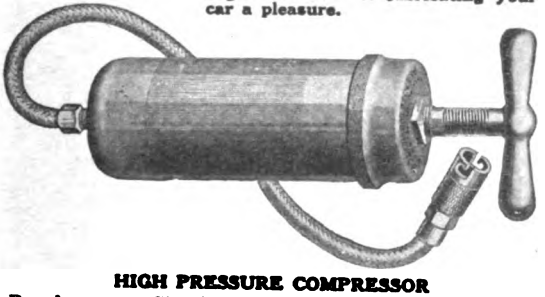
"THE ALEMITE SYSTEM"

Makes the former disagreeable task of lubricating your car a pleasure.



Caps integral with Shackle Bolts

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"TYPE G"

HIGH PRESSURE COMPRESSOR

Regular	.....Size 2 x5	Capacity.....	½ lb. Grease
Medium	.....Size 2 x8	Capacity.....	¾ lb. Grease
Large	.....Size 2½x9	Capacity.....	1¼ lb. Grease

500 pounds' pressure to square inch obtained with High Pressure Compressor, and lubrication forced into tightest bearing, therefore bearings can be kept snug and tight, eliminating all rattles, squeaks and excessive wear.

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Manufacturers all concede the "ALEMITE SYSTEM" a valuable asset.

We manufacture and furnish sufficient variety of fittings to meet the requirements of any automotive vehicle.

Can be installed by—Yourself—Garage Man—or a Dealer.

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TACKS, Upholstery

Anchor—See North-Judd Mfg. Co.
Atlas Tack Corp., Fairhaven, Mass.
Auto-Vehicle Parts Co., 3301 Colerain Ave., Cincinnati, O. "Auveco."
Auveco—See Auto-Vehicle Parts Co.
Brewer Tichener Corp., Cortland, N. Y. "Leathermet." (See page 567.)
Cleveland Tack Works, E. 55th St., Cleveland, O.
Cobb & Drew, Plymouth, Mass.
Crown—See Roberts Corp.
Eagle—See Turner & Seymour Mfg. Co.
Economy—See Neider Co.
Genesee Tack Co., 39-57 Mt. Hope Ave., Rochester, N. Y.
Imperial—See Roberts Corp.
Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill. (See page 915.)
Lethermet—See Brewer Tichener Corp.
Leatherlike—See Turner & Seymour Mfg. Co.
Milonite—See Morley Button Mfg. Co.
Morley Button Mfg. Co., 120 Boylston St., Boston, Mass. "Milonite."
Neider Co., F. A., Augusta, Ky. "Economy."
North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn. "Anchor."
Regal—See Roberts Corp.
Ripley & Bartlett Co., Water St., Plymouth, Mass.
Roberts Corp., G. G. 356 South Ave., Whitman, Mass. "Crown," "Regal," "Imperial."
Salmond & Son, Sam, Hanover, Mass.
Shelton Tack Co., Shelton, Conn.
Tockwotton Co., 79 S. Main St., Providence, R. I.
Tower Mfg. Co., Madison, Ind.
Traut & Hine Mfg. Co., New Britain, Conn.
Turner & Seymour Mfg. Co., Lawton St. & R. R., Torrington, Conn. "Eagle," "Leatherlike."
Waterman Co., R. C., Water St., South Hanover, Mass.

TAIL LAMP BRACKETS — See Brackets, Side and Tail Lamp

TAIL LAMPS—See Lamps, Electric Side and Tail; also Lamps, Oil, Side and Tail

TALC, Tire

(Including Soapstone and Mica Tire Powders)

Arnstein, Eugene, 45 W. 26th St., Chicago, Ill. "Century."
Automotive Supply Mfg. Co., 2005½ Main St., Dallas, Tex. "Cactus."
Blue Ribbon—See International Metal Polish Co.
Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.
Cactus—See Automotive Supply Mfg. Co.
Century—See Arnstein, Eugene.
Cohutta Talc Co., Dalton, Ga.
Doggett, Stanley, 11-13 Cliff St., New York, N. Y.
Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
E-Fec-Tiv—See Permatite Mfg. Co.
Hall-Thompson Co., Dept. A., Hartford, Conn. "Wonder Worker." (See page 227.)
International Metal Polish Co., Quill St. Belt R. R., Indianapolis, Ind. "Blue Ribbon."
International Mica Co., 27 W. Brandywine St. (W. Phila.) Philadelphia, Pa.
Jewell—See Wadsworth-Howland Co.
Liberty Chemical Works, 352 E. Illinois St. Chicago, Ill.
Martin-Senour Co., 2510 Quarry St., Chicago, Ill.
Mico—See Puritan Soap Co.
Nevins Co., Samuel, 109 E. Second St., Philadelphia, Pa.
Northwestern Chemical Co., 785 State St. Marietta, O. "Norwesco." (See page 277.)
Norwesco—See Northwestern Chemical Co.
Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."
Puritan Soap Co., 500 Exchange St., Rochester, N. Y. "Mico."
Richmond Mica Co., 301 E Main St., Richmond, Va. "Rimco."
Rie-Nie—See Durkee-Atwood Co.
Rimco—See Richmond Mica Co.
St. Louis Rubber Cement Co., 3046 Lambert Ave., St. Louis, Mo.
U. S. Mica Mfg. Co., Forest Park, Ill.
Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."
Whittaker, W. H., 245 Front St., New York, N. Y.
Williams & Co., C. K., N. 13th St., Easton, Pa.
Wonder Worker—See Hall-Thompson Co.

TANDEM ATTACHMENTS, MOTORCYCLE—See Seats, Motorcycle Tandem

TANK CAPS FOR FORDS—See Caps, Gasoline Tank

TANK FILLER STRAINERS—See Strainers, Radiator and Tank Filler

TANK FILLING TUBES—See Tubes, Explosive Tank Filling

TANK GAGES—See Gages, Gasoline Tank; also Gages, Vacuum Tank

TANK KEYS—See Keys, Acetylene

TANK TRUCKS—See Trucks, Acetylene and Oxygen Tank

TANKS, Acetylene

(For acetylene lights on car also including tanks; welding; see also Machines, Autogenous Welding)

Air Reduction Co., 130 Broadway, New York, N. Y. "Airco."
Airco—See Air Reduction Co.
Commerical Acetylene Supply Co., 80 Broadway, New York, N. Y.
Hackney—See Pressed Steel Tank Co.
Headlight Gas Co., 2136 N. Lawrence Ave., Wichita, Kans.
International Acetylene Co., Middletown, Conn. "Meteor."
Meteor—See International Acetylene Co.
Pressed Steel Tank Co., 58th & Greenfield Aves., Milwaukee, Wis. "Hackney."
Prest-O-Lite Co., 30 E. 42d St., New York, N. Y. (See page 1231.)

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The Replacement Spring

IN EVERY TOWN *for* EVERY CAR

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name plate stands for the best that can be built into springs. We are suggesting to millions of car owners, through such mediums as the Saturday Evening Post, and other national publications, that they look for this name plate.

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Factory:
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TANKS, Chemical Fire

(For installation on Motor Propelled Fire Apparatus)

Ajax Fire Engine Works, Bush Terminal Bldg. No. 10, Brooklyn, N. Y.

Childs Co., O. J., 138 Liberty St., Utica, N. Y.

Northern Fire Apparatus Co., 2422 University Ave., S. E., Minneapolis, Minn.

Obenchain-Boyer Co. Logansport, Ind. (See page 1135.)

Pirsch & Sons Co., Peter, Kenosha, Wis. (See page 133.)

Prospect Mfg. Co., Prospect, O.

TANKS, COMPRESSION — See Tanks, Vacuum and Compression Gasoline

TANKS, Emergency or Reserve

(For carrying a reserve supply of Gasoline or Oil; for Reserve Cocks—See Valves, Two Way Tank)

Bear—See Woolwine Metal Products Co.

Boyle Mfg. Co., Los Angeles, Cal. (See page 1189.)

Cox Brass Mfg. Co., N. Pearl & Van Woert Sts., Albany, N. Y. (See page 261.)

Dover Stamping & Mfg. Co., 385 Putnam Ave., Cambridge, Mass. (See page 433.)

Emergency Door Tank Mfg. Co., 4 Fifth St., N., Minneapolis, Minn.

Fox Automotive Products Corp., 4700 N. 18th St., Philadelphia, Pa.

Pandolfo Mfg. Co., St. Cloud, Minn. (See page 157.)

Vogel & Bros., Wm., Brooklyn, N. Y. (See page 433.)

Woolwine Metal Products Co., Eighth St. & Santa Fe Ave., Los Angeles, Cal. "Bear."

TANKS, FIRE—See Tanks, Chemical Fire

TANKS, FUEL FEED—See Tanks, Vacuum and Compression Gasoline

TANKS, Fuel and Water

A. B. & B. Sheet Metal Works, 3300-02 Fond du Lac Ave., Milwaukee, Wis.

Air-Tight Steel Tank Co., Mansion St., & B. & O. R. R., Pittsburgh, Pa. "Atsco."

Ajax Auto & Aero Sheet Metal Co., 419 W. 47th St., New York, N. Y. (See page 803.)

Atsco—See Air-Tight Steel Tank Co.

Auto Radiator Mfg. Co., 1712 S. Michigan Ave., Chicago, Ill.

Automotive Sheet Metal Co., Factory St. & Grand Trunk R. R., Kalamazoo, Mich. "Maco."

Badger & Sons Co., E. B., 63-69 Pitts St., Boston, Mass.

Blickman, S., New York, N. Y. (See page 751.)

Briskin Mfg. Co., 215 S. Hoyne Ave., Chicago, Ill.

Brummeler-Ruggles Metal Products Co., 1215 Ionia Ave., S. W., Grand Rapids, Mich.

Brummeler's Sons Co., Wm., 413 Ionia Ave., S. W., Grand Rapids, Mich. "Brusco."

Brusco—See Brummeler's Sons Co.

Buffalo Pressed Steel Co., Buffalo, N. Y. (See page 655.)

Bush Mfg. Co., Hartford, Conn. (See page 797.)

Case Mfg. Co., 314-16 N. Mechanic St., Jackson, Mich.

Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representative.) (See page 345.)

Champion Milk Cooler Co., 52-60 Owego St., Cortland, N. Y.

Chicago Mfg. Co., 1458-64 Michigan Ave., Chicago, Ill.

Clayton & Lambert Mfg. Co., Detroit, Mich. (See page 981.)

Clayton's Sons, Frank B., 1227-33 N. 11th St. Philadelphia, Pa.

Columbus Auto Brass Co., Columbus, O. (See page 1139.)

Cornwall Mfg. Co., Cleveland, O. (See page 951.)

Davis-Watkins Mfg. Co., 122 Morgan St., Jersey City, N. J.

Derby Coppersmithing & Sheet Metal Contracting Co., First & Caroline Sts., Derby, Conn.

Detroit Auto Specialty Corp., 6209 Greenwood Ave., Detroit, Mich.

Elsener Mfg. Co., C. C., 15423 Center St., Harvey, Ill.

Esllen Sheet Metal Works, 1001 30th St., Milwaukee, Wis.

Evans Mfg. Co., First Ave. & 21st St., Moline, Ill.

Federal Pressed Steel Co., 52 Keefe Ave., Milwaukee, Wis. (See page 901.)

Fostoria Pressed Steel Co., Fostoria, O. (See page 993.)

Freeland Sons Co., B. F., Sturgis, Mich.

Gender, Paeschke & Frey Co., 1365-1700 St. Paul Ave., Milwaukee, Wis. (See page 949.)

Hackney—See Pressed Steel Tank Co.

Janney-Steinmetz & Co., Philadelphia, Pa. "Jasco." (See page 951.)

Jasco—See Janney-Steinmetz & Co.

Johnson's Automobile Sheet Metal Works W. N., 620-28 South J St., Richmond, Ind.

Kells Mfg. Co., W. J., 521-25 W. 45th St. New York, N. Y.

Kirk & Blum, 2846 Spring Grove Ave., Cincinnati, O.

Kleber-Sherman Mfg. Co., 2807 S. Michigan Ave., Chicago, Ill.

Koven & Bro., L. O., 154 Ogden St., Jersey City, N. J.

Lawco—See Lawson Co.

Lawson Co., F. H., Dept. D, Cincinnati, O. "Lawco." (See page 327.)

Maco—See Automotive Sheet Metal Co.

Made-O-Metal—See Pandolfo Mfg. Co.

Mertz Mfg. Co., John, Water & Decatur Sts. Sandusky, O.

Metal Auto Parts Co., Chase & Henry Sts. Indianapolis, Ind.

Michigan Crown Fender Co., N. Huron St. Ypsilanti, Mich.

Michigan Stamping Co., 11631 Mack Ave. Detroit, Mich.

Mitchell & Son, G. F., 6501 Cedar Ave., Cleveland, O.

Morrison & Sons., F., 1330 W. 11th St. Cleveland, O. (See page 951.)

Motors Metal Mfg. Co., 5936 Milford Ave. Detroit, Mich.

Murray Auto Parts Mfg. Co., Atlanta, Ga.

Murray Mfg. Co., J. W., 571 Clay Ave., Detroit, Mich.

National Enameling & Stamping Co., 413 Fifth Ave., New York, N. Y.

Pandolfo Mfg. Co., St. Cloud, Minn. "Made-O-Metal." (See page 157.)

Paragon Auto-Parts Mfg. Co., 506 W. 53d St. New York, N. Y.

Perfex Radiator Co., Racine, Wis.

Phillips & Co., H., 904-10 Evans St., Cincinnati, O.

Pressed Steel Tank Co., 58th & Greenfield Aves., Milwaukee, Wis. "Hackney."

Progressive Sheet Metal Co., 1976-84 Central Ave., Cincinnati, O.

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OVER 15 ACRES OF FLOOR SPACE

WHAT G. P. & F. "PRESSED STEEL" SERVICE MEANS:

Our years of experience enable us to guarantee the accuracy and dependability of our work.

Our up-to-date facilities and large organization enable us to handle your orders promptly and economically for you.

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Send blue prints showing shape and size of your tanks for quotations, stating quantity required.

Our experience, facilities and organization enable us to quote you attractive prices.

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It is the perfected product of the nationally known H. P. Maxim.

By equipping your motor vehicles with Maxim Silencers, you are putting a strong sales argument in place of a nameless muffler.

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STAMPINGS

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TANKS, Fuel & Water (Continued)

Pullman Ventilator & Mfg. Co., West York Ave. & W. M. R. R., York, Pa.
S. & J.—See Shotwell-Johnson.
Scaife & Sons Co., Wm. B., Fifth Ave. & Wood St., Pittsburgh, Pa.
Sexton Can Co., 123 Broad St., Boston, Mass.
Shotwell-Johnson, Minneapolis, Minn. "S-J." (See page 1115.)
Standard Steel Works, 1722 Tracy Ave., Kansas City, Mo. (See page 147.)
Todd Mfg. Co., 12-14 N. 12th St., Minneapolis, Minn.
Trageser Steam Copper Works, John, 447-57 W. 26th St., New York, N. Y. (See page 955.)
Welded Steel Barrel Corp., Hart & Charlevoix Aves., Detroit, Mich.
Western Drop Forge Co., Marion, Ind. (See page 727.)
Western Metal Specialty Co., 1919 St. Paul Ave., Milwaukee, Wis.
Western Radiator & Fender Mfg. Co., 1430 Bush St., San Francisco, Cal.
Wilson & Bowen, 1313 S. Main St., Los Angeles, Cal.
Wright Cooler & Hood Mfg. Co., 4868-70 N. Clark St., Chicago, Ill.
Xardell Corp., W. Pleasant St., Utica, N. Y.
York Corrugating Co., York, Pa.

TANKS, GASOLINE AND WATER—See Tanks, Fuel; also Tanks, Emergency and Reserve; also Tanks and Systems, Gasoline

TANKS, Inner Tube Testing

(Specially formed tanks for locating leaks in tubes)

Boyle Mfg. Co., Los Angeles, Cal. (See page 1189.)
Dover Stamping & Mfg. Co., 385 Putnam Ave., Cambridge, Mass.
Haco—See Heller-Aller Co.
Heller-Aller Co., Napoleon, O. "Haco."
P. S. M. Co., Minneapolis, Minn.

TANKS and SYSTEMS, Gasoline Storage

Arco—See Tokheim Mfg. Co.
Air-Tight Steel Tank Co., Mansion St. & B. & O. R. R., Pittsburgh, Pa. "Atsco."
Allen Pressure System Co., 24 W. 61st St., New York, N. Y. "Apsco."
American Oil Pump & Tank Co., Findlay & Dalton Sts., Cincinnati, O.
Apsco—See Allen Pressure System Co.
Atsco—See Air-Tight Steel Tank Co.
Avon Specialties Mfg. Co., 44-46 Market Pl., Baltimore, Md. "U-C-What-U-Get." (See page 955.)
Barnes Mfg. Co., Mansfield, O.
Beman Automatic Oil Can Co., Meadville, Pa.
Big Gusher—See Western Oil Pump & Tank Co.
Biggs Boiler Works Co., 1007 Bank St., Akron, Ohio.
Bowser & Co., S. F., Fort Wayne, Ind.
Boyle-Dayton Co., 51st St. & Santa Fe Ave., Los Angeles, Cal.
Brady—See Visible Measure Gasoline Dispenser Co.
Butler Mfg. Co., 1324 Grand Ave., Kansas City, Mo.
Chicago Steel Tank Co., 1318 S. 55th St., Cicero, Ill.
Clear Vision Pump Co., 1107 E. Douglas Ave., Wichita, Kans.
Climax—See Keystone Boiler & Foundry Co.
Dayton Pump & Mfg. Co., Fifth & Norwood Sts., Dayton, O. "Rapidayton."
Delphos Mfg. Co., 100-24 S. Pierce St., Delphos, O.
Eastern Oil Tank Co., 146 Fletcher St., Lowell, Mass.
Economy Gas Machine Co., Rochester, N. Y.
Equipment Supply Co., York, Pa. "Standard."
Eslein Sheet Metal Works, 1001 30th St., Milwaukee, Wis.
Fabricated Steel Products Corp., Box 909, Leetonia, O. (See page 1021.)
Farr Hydraulic Systems, 11 Broadway, New York, N. Y.
Fleckenstein Visible Gasometer Co., 328 Bond Ave., Grand Rapids, Mich.
Freeland Sons Co., B. F., Sturgis, Mich. "Pioneer."
Freeland Steel Tank Co., Second & Adams Sts., Portage, Wis.
Geyser—See Visible Gasoline Dispenser Co.
Gilbert & Barker Mfg. Co., 28 Union St., Springfield, Mass.
Graver Corp., 4809 Todd Ave., East Chicago, Ind.
Groetken Pump Co., 171 Middle Ave., Aurora, Ill. "Jumbo."
Guarantee Liquid Measure Co., Rochester, Pa. (See page 933.)
Haco—See Heller-Aller Co.
Harry Steel Co., O. K., 2333-35 Papin St., St. Louis, Mo.
Hawkeye—See Tokheim Mfg. Co.
Heil Co., 1136-40 Montana Ave., Milwaukee, Wis. "Quality." (See page 147.)
Heller-Aller Co., Napoleon, O. "Haco."
Hull—See Southern Foundry & Mfg. Co.
Ideal—See Kupferle Bros. Mfg. Co.
Ideco, Inc., 311 N. Fifth St., Springfield, Ill.
Imperial—See Western Oil Pump & Tank Co.
Inglis Mfg. Co., 283 Fifth Ave., Milwaukee, Wis.
Jackson Metal Products Co., 601-15 Liberty St., Jackson, Mich.
Jumbo—See Groetken Pump Co.
Kewanee Private Utilities Co., Franklin St., Kewanee, Ill.
Keystone Boiler & Foundry Co., Landisville, Pa. "Climax."
Kirk & Blum, 2846 Spring Grove Ave., Cincinnati, O.
Koven & Bro., L. O., 154 Ogden St., Jersey City, N. J.
Kupferle Bros. Mfg. Co., 600-04 N. Second St., St. Louis, Mo. "Ideal."
Lamco—See Lehman Mfg. Co.
Leetonia Boiler Co., Leetonia, O.
Lehman Mfg. Co., 310 Fourth St., Cannelton, Ind. "Lamco." (See page 151.)
Little Gem—See Western Oil Pump & Tank Co.
Little Sampson—See Western Oil Pump & Tank Co.
Martini & Huneke Co., of America, 1201 Hudson St., Hoboken, N. J.
Milwaukee Tank Works, Fratney & Becker Sts., Milwaukee, Wis.
Mogul—See Western Oil Pump & Tank Co.
Morrison Bros., 24th & Elm Sts., Dubuque, Ia.
Morrison Steel Products Co., 26-28 E. North St., Buffalo, N. Y.
Morrison Bros., Elm St., Dubuque, Ia.
National Enameling & Stamping Co., 413 Fifth Ave., New York, N. Y.

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TANKS and SYSTEMS, Gasoline Storage (Continued)

National Store Specialty Co., Bareville, Pa. "Pennsylvania."

Nebraska & Iowa Steel Tank Co., 1300 Willis Ave., Omaha, Neb. "Nelo."

Neil & Co., Wm., 617 Division St., Chicago, Ill.

Nelo—See Nebraska & Iowa Steel Tank Co.

Nicholson Co., Fancourt St. & Duquesne Way, Pittsburgh, Pa.

Niles Steel Tank Co., Niles, Mich.

Norwich Storage Tank Co., Lackawanna Ave., Norwich, N. Y.

Peerless Equipment Co., 6022 S. State St., Chicago, Ill.

Pennsylvania—See National Store Specialty Co.

Perfection—See Western Oil Pump & Tank Co.

Pioneer—See Freeland Sons Co.

Phillips & Co., H., 904-10 Evans St., Cincinnati, O.

Quality—See Heil Co.

Rapidayton—See Dayton Pump & Mfg. Co.

Raymond Garage Equipment Co., Center St., Adrian, Mich.

Scaife & Sons Co., Wm. B., Fifth Ave. & Wood St., Pittsburgh, Pa.

Sheet Metal Products Co., Duluth, Minn.

Shotwell Pump & Tank Co., 22 Parkman St., Boston, Mass.

Standard—See Equipment Supply Co.

Standard Liquid Recording Co., 115 Broadway, New York, N. Y.

Stover Steel Tank & Mfg. Co., Hancock Ave., Freeport, Ill.

Southern Foundry & Mfg. Co. (Seven Hills), Owensboro, Ky. "Hull."

Tirrill Gas Machine Lighting Co., 103 Park Ave., New York, N. Y.

Tokheim Oil Tank & Pump Co., Wabash Ave. & Wabash R.R., Fort Wayne, Ind. "Acro," "Hawkeye." "Victory."

Trageser Steam Copper Works, John, 447-57 W. 26th St., New York, N. Y. (See page 955.)

U-C-What-U-Get—See Avon Specialties Mfg. Co.

Universal Iron & Supply Co., St. Louis, Mo.

Vac Liquid Equipment Co., 1125 C Ave., W., Cedar Rapids, Ia.

Victory—See Tokheim Oil Tank & Pump Co.

Visible Gasoline Dispenser Co., House Bldg., Pittsburgh, Pa. "Geyser."

Visible Measure Gasoline Dispenser Co., 700-800 W. Breckenridge St., Louisville, Ky. "Brady."

Wayne Oil Tank & Pump Co., 703 Canal St., Fort Wayne, Ind. (See page 953.)

Welded Steel Barrel Corp., Hart & Charlevoix Aves., Detroit, Mich.

Western Oil Pump & Tank Co., 2437 Kosciusko St., St. Louis, Mo. "Little Sampson," "Imperial," "Perfection," "Little Gem," "Big Gusher," "Mogul."

TANKS and SYSTEMS, Oil

(For storing and handling oil in filling stations)

Jiffy—See Protectó Pump Co.

Protecto Pump Co., Dayton, O. "Jiffy."

TANKS, Oxygen

(For use in Autogenous Welding or Carbon Removing)

Air Reduction Co., 120 Broadway, New York, N. Y. "Airco."

Airco—See Air Reduction Sales Co.

Burdett Oxygen Co., 1401-05 Jackson Blvd., Chicago, Ill.

Electrox Co., ft. Bridge, Peoria, Ill.

Linde Air Products Co., 30 E. 42d St., New York, N. Y.

Rego—See Universal Oxygen Co.

Superior Oxygen Co. of Mo., 115 Plum St., St. Louis, Mo.

Tariffville Oxygen & Chemical Co., Tariffville, Conn.

Universal Oxygen Co., 14th & Illinois Sts., Sheboygan, Wis. "Rego."

TANKS, RESERVE—See Tanks, Emergency

TANKS, STORAGE—See Tanks, Gasoline Storage

TANKS, Tire Inflating

(Steel tanks filled with compressed air or carbonic acid gas for carrying on car)

Cleveland Faucet Co., 708 Frankfort Ave., N. W., Cleveland, O.

Liquid Carbonic Co., 3100 S. Kedzie Ave., Chicago, Ill.

TANKS, Vacuum and Compression Gasoline

(For Magnetic Pumps—See Systems, Magnetic Pump)

Carter Carbureter Co., 2238-40 N. Spring Ave., St. Louis, Mo.

Impulse Tank Co., 2322 N. Spring Ave., St. Louis, Mo.

Sparks-Withington Co., Jackson Mich. "Sparton."

Sparton—See Sparks-Withington Co.

Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 177.)

Vapor-Valve Co., 2322 N. Spring Ave., St. Louis, Mo. "Vaporspray."

Vaporspray—See Vapor-Valve Co.

TANKS, WATER—See Tanks, Fuel

TAP EXTRACTORS—See Extractors, Broken Tap

TAPE, Insulating and Tire

Anchor Packing Co., 72 Murray St., New York, N. Y. "Apex." (See page 669.)

Anchor Webbing Co., 300 Brook St., Pawtucket, R. I.

Apex—See Anchor Packing Co.

Boston Woven Hose & Rubber Co., Cambridge, Mass. "Evergrip."

Clifton Mfg. Co., 65 Brookside Ave. (Jamaica Plain), Boston, Mass.

Evergrip—See Boston Woven Hose & Rubber Co.

Gilmer Co., L. H., Philadelphia, Pa. (See page 123.)

Goodrich Co., B. F., S. Main St., Akron, O.

Hudson Narrow Fabric Co., Cherry St., Hudson, Mass.

Indiana Rubber & Insulated Wire Co., Jonesboro, Ind.

J-M—See Johns-Manville Co.

Johns-Manville Co., H. W., Madison Ave. & 41st St., New York, N. Y. "J-M."

Kerite Insulated Wire & Cable Co., New York, N. Y. (See page 1077.)

Manson—See Okonite Co.

Multibestos Co., Walpole, Mass. "Stonewall." (See page 661.)

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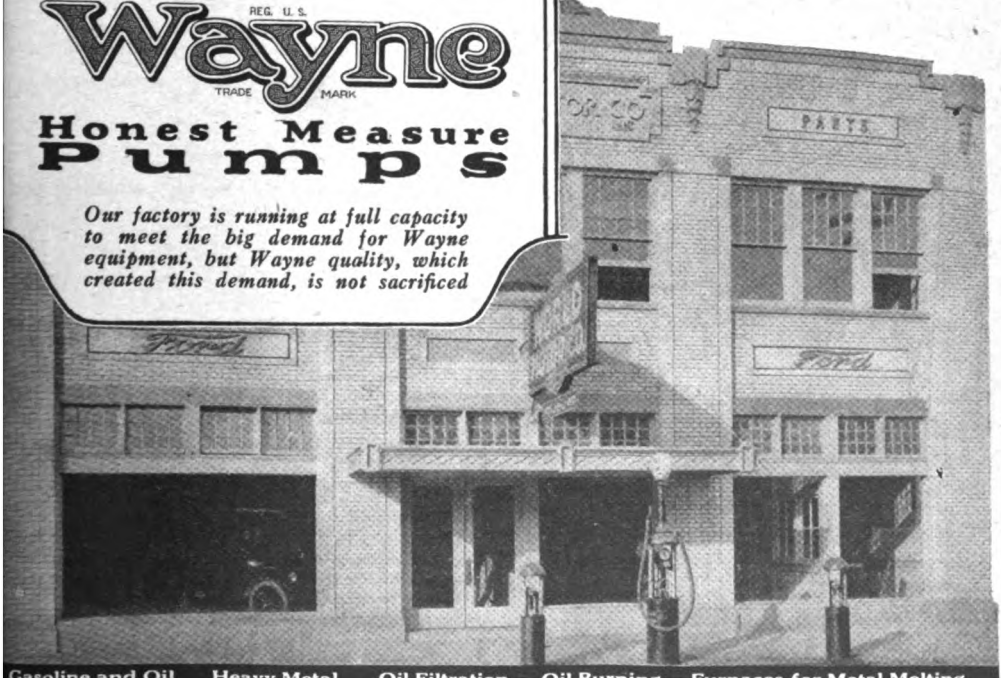

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TAPE, Insulating and Tire (Cont'd)

National Rubber & Specialties Co., 4432-39 Chickering Ave., Cincinnati, O. "Red Cross."

New York Insulated Wire Co., 114 Liberty St., New York, N. Y.

Okonite Co., Passaic, N. J. "Manson."

Red Cross—See National Rubber & Specialties Co.

Russell Mfg. Co., 508 Russell Ave., Middletown, Conn. (See page 121.)

St. Louis Rubber Cement Co., 3046 Lambdin Ave., St. Louis, Mo.

Smith Belting Co., Manning J., 39 E. Ashmead St. (Germantown), Philadelphia, Pa. (See page 121.)

Stanwal—See Multibestos Co.

United States Tire Co., 1790 Broadway, New York, N. Y.

Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Wood Mfg. Co., Frank, 45 E. 17th St., New York, N. Y.

TAPE, TIRE—See Tape, Insulating

TAPER PINS—See Pins, Taper

TAPER SHIMS, REAR AXLE FOR FORDS—See Shims, Rear Axle Taper

TAPERING MACHINES—See Machines, Spring Leaf Tapering

TAPES, Airplane Paper

Easimoov—See Ideal Coated Paper Co.

Ideal Coated Paper Co., Brookfield, Mass. "Easimoov."

TAPPET SILENCERS, OVERHEAD VALVE—See Silencers, Overhead Valve.

TAPPETS, VALVE—See Rods, Adjustable Valve Lift

TAPPING DRILLS—See Drills, Upright

TAPPING MACHINES—See Machines, Tapping

TAPS, Dies and Screw Plates

Acme—See American Tap & Die Co.

Adamantine—See American Tap & Die Co.

American Tap & Die Co., Greenfield, Mass. "Adamantine," "Acme," "Eagle." (See page 927.)

Bay State Tap & Die Co., 75 Chauncy St., Mansfield, Mass.

Besly Co., Charles H., 118-24 N. Clinton St., Chicago, Ill.

Blancke Co., L. C., 10-12 Thomas St., New York, N. Y. (Sole Distributors for Blancke Twist Drill & Tool Co., Taunton, Mass.

Blancke Twist Drill & Tool Co.—See Blancke Co.

Brubaker & Bros., W. L., 50 Church St., New York, N. Y. (See page 349.)

Butterfield & Co. (Division of Union Twist Drill Co.), Derby Line, Vt. "Derby."

Card Mfg. Co., S. W., Mansfield, Mass. "Paragon."

Carpenter Tap & Die Co., J. M., 17 Newell Ave., Pawtucket, R. I.

Champion Blower & Forge Co., Harrison Ave. & Charlotte St., Lancaster, Pa.

Conant & Donelson Co., Conway, Mass. "Reliable."

Derby—See Butterfield & Co.

Detroit Twist Drill Co., Detroit, Mich. (See page 955.)

Eagle—See American Tap & Die Co.

GTD—See Greenfield Tap & Die Corp.

Green River—See Greenfield Tap & Die Corp.

Greenfield Tap & Die Corp., Greenfield, Mass. "Little Giant," "Lightning," "Green River," "Hercules," "G T D." (See page 927.)

Hardinge Bros., 1770 Berteau Ave., Chicago, Ill.

Helmet—See Besly & Co.

Hercules—See Greenfield Tap & Die Corp.

Keystone Reamer & Tool Co., Millersburg, Pa. (See page 791.)

Knapp Engineering Corp., Arthur, 19 W. 44th St., New York, N. Y. (See page 881.)

Lightning—See Greenfield Tap & Die Corp.

Little Giant—See Greenfield Tap & Die Corp.

Manufacturers Equipment Co., 169 N. Jefferson St., Chicago, Ill.

Morse Twist Drill & Machine Co., 163 Pleasant St., New Bedford, Mass.

Oster Mfg. Co., 2102 E. 61st St., Cleveland, O.

Paragon—See Card Mfg. Co.

Polk & Son Co., A. J., Millersburg, Pa.

Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 339.)

Reed & Prince Mfg. Co., Duncan Ave., Worcester, Mass.

Reliable—See Conant & Donelson.

Remington Tool & Machine Co., 97 Haverhill St., Boston, Mass.

Republic Tool & Mfg. Co., 1399-1401 W. Ninth St., Cleveland, O. (Jobbers.) (See page 369.)

Russell Mfg. Co., Carpenters Lane, Greenfield, Mass.

Standard Tool Co., 6900-34 Central Ave., Cleveland, O.

Thistle—See Winter Bros. Co.

Toledo Tap & Die Co., Clinton St. & Oakwood Ave., Toledo, O.

W & P—See Webster & Perks Tool Co.

Webster & Perks Tool Co., Springfield, O. "W & P."

Winter Bros. Co., Kendrick St., Wrentham, Mass. "Thistle."

TAPS, Dies and Screw Plates for Fords

Butterfield & Co., (Division of Union Twist Drill Co.) Derby Line, Vt.

Greenfield Tap & Die Corp., Greenfield, Mass "Lightning."

Lightning—See Greenfield Tap & Die Corp.

Wells & Son Co., F. E., 75 Ridell St., Greenfield, Mass.

TAR REMOVING COMPOUNDS—See Compounds, Tar Removing

TAXIMETERS

American Taximeter Co., 16 W. 61st St., New York, N. Y. "Popp," "Jones."

Jones—See American Taximeter Co.

Ohmer Fair Register Co., Bolender & Big Four R. R., Dayton, O.

Pittsburgh Taximeter Co., Manufacturers Bldg., Pittsburgh, Pa.

Popp—See American Taximeter Co.

Stoll Mfg. Co., 33rd & Walnut Sts., Denver, Colo.

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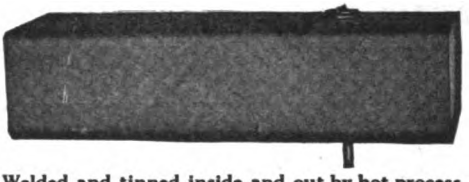

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TEE STEEL—See Steel, Angle

TEES, PIPE—See Fittings, Pipe

TELEPHONES, Airplane

Aviaphone—See Dictograph Products Corp.

Dictograph Products Corp., 220 W. 42d St., New York, N. Y. "Aviaphone."

TELEPHONES, Limousine

(For Speaking Tubes—See Tubes, Speaking; For Annunciators—See Annunciators)

American Electric Co., 6401 S. State St., Chicago, Ill. "Carphone."

Carphone—See American Electric Co.

Chau-Phone—See Western Electric Co.

Dictograph Products Corp., 220 W. 42d St., New York, N. Y.

Gohring—See Taylor Co.

Klaxon Co. (Motor Equipment Division), 3066 W. Grand Blvd., Detroit, Mich. "Stentor." (See page 957.)

O'Brien Mfg. Co., Joseph F., 391 Broadway, New York, N. Y.

Stentor—See Klaxon Co.

Taylor Co., H. D., 99-115 Oak St., Buffalo, N. Y. "Gohring."

Western Electric Co., 195 Broadway, New York, N. Y. "Chau-Phone."

TEMPERATURE CONTROLLERS FOR FORDS—See Covers, Automatic Radiator

TEMPERATURE INDICATING METERS—See Meters, Water Temperature; also Meters, Oil Temperature Indicating

TEMPERING FURNACES—See Furnaces, Annealing

TEMPERING, METAL—See Treating, Heat

TENDERS, Tractor

(Wheeled truck equipped with fuel, oil and water tanks)

Steinke Bros. Mfg. Co., Schradski Bldg., Peoria, Ill.

TENONING MACHINES — See Machines, Wood Mortising

TENTS, Touring

Anton & Ackerman Co., 132-34 Kansas Ave., Topeka, Kans.

Arapahoe—See Brooks Tent & Awning Co.

Auto Bed Camp Mfg. Co., 2207 Pennsylvania St., Kansas City, Mo.

Brooks Tent & Awning Co., 1655 Arapahoe St., Denver, Colo. "Arapahoe."

Burch Mfg. Co., F. J., First St. & Santa Fe Ave., Pueblo, Colo. "Pullman."

Carnie-Goudie Mfg. Co., 22d & Grand Sts., Kansas City, Mo.

Channon Co., H., 150 N. Market St., Chicago, Ill.

Cleveland-Akron Bag Co., Cleveland, O. (See page 101.)

Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.

Compac Tent Co., 425 W. Tenth St., Indianapolis, Ind.

Cruiser Motor Car Co., Madison, Wis.

Demoin—See Des Moines Tent & Awning Co.

Des Moines Tent & Awning Co., 913-15 Walnut St., Des Moines, Ia. "Demoin."

Enterprise Bed Co., Hammond, Ind.

Genesee Mfg. Co., 516-18 Harrison St., Flint, Mich.

Goss Co., J. C., 20 E. Woodbridge St., Detroit, Mich.

Metropolitan Air Goods Co., Chestnut Hill Ave., Athol, Mass. "Utility."

Phoenix Tent & Army Co., First & Monroe Sts., Phoenix, Ariz.

Pullman—See Burch Mfg. Co.

Red Seal—See Schaefer Tent & Awning Co.

Schaefer Tent & Awning Co., Denver, Colo. "Red Seal." (See page 117.)

Stoll Mfg. Co., 3250 Larimer St., Denver, Colo.

Strong Bungalow Co., 226 Edgewood St., Hartford, Conn.

Tentobed Co., 3300 W. Jackson Blvd., Chicago, Ill.

Utility—See Metropolitan Air Goods Co.

Wenzel Tent & Duck Co., H., 1035 Paul St., St. Louis, Mo.

Way Sagless Spring Co., E. Hennepin St. & Fifth Ave., S. E., Minneapolis, Minn.

TERMINAL CLEANING TOOLS—See Tools, Terminal Cleaning

TERMINAL TONGS—See Tools, Storage Battery Repair

TERMINALS, STORAGE BATTERY—See Connectors, Storage Battery

TERMINALS, STORAGE BATTERY REPAIR—See Parts, Storage Battery Repair

TERMINALS, Timer, for Fords

Pedersen Lubricator Co., 636 First Ave., New York, N. Y. "United."

United—See Pedersen Lubricator Co.

TERMINALS, Wire

(See also Connectors, Battery)

Barcy-Nicholson Co., 2801-19 W. Fort St., Detroit, Mich.

Becco—See Michigan Motor Specialties Co.

Blauvelt Co., James P., Cedar St., Nyack, N. Y.

Blublaze Motor Specialties Corp., 49-51 W. 66th, New York. "United." (See page 961.)

Braesnell, J. H., 26 Court St., Brooklyn, N. Y.

Champion Spark Plug Co., 801 Avondale Ave., Toledo, O. "J-D." (See page 713.)

Connecticut Telephone & Electric Co., Meriden, Conn.

Eureka—See Morse, Frank W.

Fahnestock Electric Co., Meadow St., Long Island City, N. Y.

Fitzgerald Mfg. Co., Torrington, Conn. (See page 451.)

Grip-Tite—See Universal Products Co.

Herz, 182 Locust Ave., New York, N. Y. (See page 713.)

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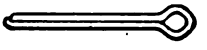

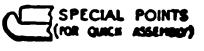

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TERMINALS, Wire (Continued)

Hi-Po Waterproof Battery Corp., South Norwalk, Conn.

Ideal Clamp Mfg. Co., 198-202 Bradford St., Brooklyn, N. Y. (See page 241.)

J-D—See Champion Spark Plug Co.

Lombardi Motor Car Co., 67-71 Minerva St., Derby, Conn.

Michigan Motor Specialties Co., 120 Mt. Elliott Ave., Detroit, Mich. "Becco."

Morse, Frank W., 289 Congress St., Boston, Mass. "Eureka." (See page 549.)

Patton-MacGuyer Co., 31 Mathewson St., Providence, R. I.

Pines Mfg. Co., Dept. E, 408-10 N. Sacramento Blvd., Chicago, Ill. (See page 1121.)

Rajah Auto Supply Co., Locust Ave. & Nelson St., Bloomfield, N. J.

Shain, Chas. D., Brooklyn, N. Y.

Sherman Mfg. Co., H. B., Battle Creek, Mich. (See page 293.)

United—See Blublaze Motor Specialties Corp.

Universal Products Co., 908 W. Chicago Ave., Chicago, Ill. "Grip-Tite."

TEST CLIPS—See Clips, Electrical Test

TEST COCKS FOR FORDS—See Gages, Oil

TEST STANDS, ELECTRIC—See Stands, Electric Test

TESTERS, ACID—See Hydrometers

TESTERS, BATTERY—See Gages, Battery; also Hydrometers

TESTERS, Coil

(Board for shop use for testing and adjusting coils)

Ballman-Whitten Mfg. Co., 4015 Laclede Ave., St. Louis, Mo.

Durham Co., P. J., 244 W. 49th St., New York, N. Y. (See page 531.)

TESTERS, ELECTRICAL—See Instruments, Electrical

TESTERS, GASOLINE—See Hydrometers

TESTERS, GEAR—See Instruments, Gear Testing

TESTERS, METAL—See Instruments, Metal Testing

TESTERS, PLUG—See Testers, Spark Plug

TESTERS, RUBBER—See Instruments, Rubber Testing

TESTERS, Spark Plug

Buckeye—See Central Brass & Fixture Co.

Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."

Morgan, C. W., 1336 Michigan Ave., Chicago, Ill.

Perkins Spark Plug Tester Co., 350 Broadway, New York, N. Y.

Radamax—See Smith & Sons.

Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) "Radamax." (See page 301.)

TESTING BUSHINGS—See Bushings, Spark Plug Testing

TESTING DYNAMOMETERS—See Dynamometers, Electric Testing

TESTING HYDROMETERS—See Hydrometers, Testing

TESTING INDICATORS — See Indicators, Gasoline Engine

TESTING INSTRUMENTS, ELECTRICAL CIRCUIT—See Instruments, Electrical Circuit Testing

TESTING INSTRUMENTS, GEAR—See Instruments, Gear Testing

TESTING INSTRUMENTS, METAL—See Instruments, Metal Testing

TESTING INSTRUMENTS, RUBBER—See Instruments, Rubber and Felt Testing

TESTING INSTRUMENTS, STORAGE BATTERY—See Instruments, Battery Testing

TESTING MACHINES, SPRING—See Machines, Spring Testing

TESTING PLUGS, RADIATOR, FOR FORDS—See Plugs, Radiator Testing

TESTING TANKS—See Tanks, Inner Tube Testing

THERMOMETER LOCKS, RADIATOR—See Locks, Radiator Thermometer

THERMOMETERS, Aircraft

Foxboro Co., Neponset Ave., Foxboro, Mass.

National Gauge & Equipment Co., La Crosse, Wis. "Radi-Meter." (See page 437.)

Radi-Meter—See National Gauge & Equipment Co.

Rieker Instrument Co., 1919-21 Fairmount Ave., Philadelphia, Pa.

THERMOMETERS, RADIATOR — See Meters, Water Temperature Indicating

THERMOMETERS, Vulcanizer

Genco—See General Scientific Equipment Co.

General Scientific Equipment Co. (North Philadelphia), Philadelphia, Pa. "Genco."

Queen-Gray Co., 616-18 Chestnut St., Philadelphia, Pa.

Randall-Faichney Co., 76 Atherton St., Boston, Mass.

Standard Thermometer Co., 65 Shirley St., Roxbury, Mass. (See page 883.)

Storage Battery Supply Co., 239 E. 27th St., New York, N. Y.

Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.

Weinhagen & Hespe, 159-65 Leonard St., New York, N. Y.

Wilson & Wilson (Waverly Sta.), Boston, Mass.

THERMOSTATIC CARBURETOR REGULATORS FOR FORDS—See Regulators, Thermostatic Carburetor

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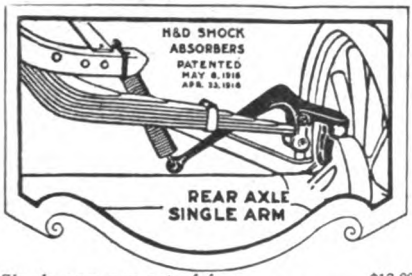
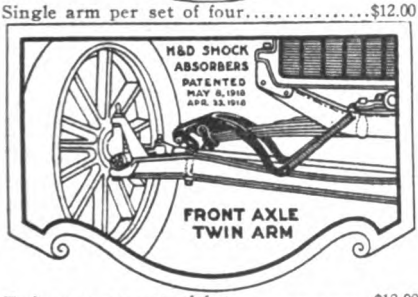
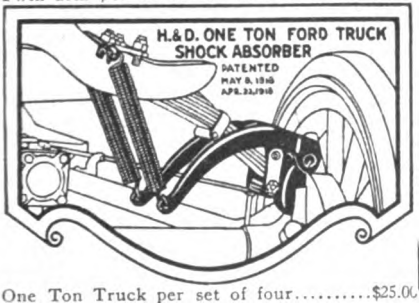


Single arm per set of four.....$12.00



Twin arm per set of four.....$12.00



One Ton Truck per set of four.....$25.00

H&D
SHOCK ABSORBERS

CRAWFORDSVILLE, IND.

In Canada
RICHARDS-WILCOX COMPANY
London, Ontario

H&D SHOCK ABSORBERS are made in single and twin arm types for all Ford Cars. There is a special type for the Roadster, Touring Car, Coupe, Sedan, Taxi, Commercial Delivery and One Ton Truck.

Mechanically Perfect

They are guaranteed against ALL defects, both of material and workmanship. Any part that does not give satisfaction will be cheerfully replaced, when returned, charges paid, free of charge.

30 Days' Trial Guarantee

Dealers are authorized to put H&D's on any Ford. Should the owner decide to have them removed after the 30 days' trial, we give a new set for every one so removed and our draft for $3.00 to pay for the dealer's time and trouble.

24 Hour Parts Service

H&D distributors are located conveniently to all dealers in the United States and Canada. They carry a complete stock of parts for 24-hour service. Parts broken or giving unsatisfactory wear are replaced free.

SERVICE PARTS FOR H & D SHOCK ABSORBERS

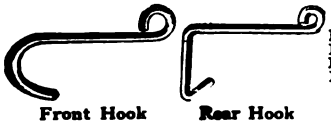
Single Arm

Casting

No. 11 Left Front Casting.....$1.80
No. 12 Right Front Casting.... 1.80
No. 13 Right Rear Casting..... 1.80
No. 14 Left Rear Casting..... 1.80

Springs

No. 3 Sedan or Taxi Spring....$0.70
No. 4 Touring Spring ..... .70
No. 5 Roadster Spring ..... .70

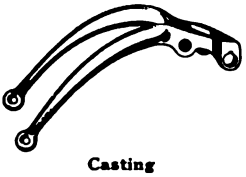


Front Hook **Rear Hook**

No. 01 Front Hook $0.25
No. 02 Rear Hook ..... .25
No. 03 Sedan Hook, Rear..... .25

No. 16 Perch, Drop Forge.....$0.90
No. 51 3x⅞ Front Lock Bolt with castle nut..... .35
No. 52 3½x⅞ Rear Lock Bolt with castle nut..... .35

Twin Arm



Casting

No. 231 Front Casting $1.80
No. 232 Rear Casting 1.80

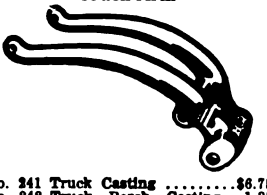
Springs

No. 6 Delivery Springs.....$0.45
No. 7 Sedan or Taxi Springs.. .45
No. 8½ Touring or Coupe Springs .45
No. 10 Roadster Spring ..... .45

Front Spring Clip **Rear Hook**

No. 23 Front Spring Clip.....$0.25
No. 24 Rear Hook ..... .25

Truck Arm



No. 241 Truck Casting $6.75
No. 242 Truck Perch Casting.. 1.35
No. 243 Rear Hook..... .90
No. 53 Lock Bolt with castle nut ..... .90
No. 21 Perch Bolt ..... .70
No. 33 Spring ..... .90

NOTE: No. 16 Perch and Nos. 51 and 52 Lock Bolts are the same size for both single and double arm absorbers. No. 8½ Springs are regular front equipment for all twin arm types. No. 4 Springs are regular front equipment for all single arm types. Front truck, half set, the same equipment as twin arm touring.

WRITE FOR OUR JOBBERS AND DEALERS NET PRICE LISTS ON SETS AND PARTS

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THERMOSTATS, Storage Battery

(Small thermostat to be attached to battery to indicate by means of colored lights the temperature of the battery)

Resco Products Co., Jamestown, N. Y. "Rescue."

Rescue—See Resco Products Co.

THERMOSTATS, WATER CIRCULATION REGULATING—See Regulators, Water Circulating

THIMBLES and FERRULES, Airplane Wire

Barcalo Mfg. Co., 225 Louisiana St., Buffalo, N. Y.

Roeblings Sons Co., John A., S. Broad & Canal Sts., Trenton, N. J.

THREAD CUTTING COMPOUNDS—See Lubricants, Cutting

THREAD, Top and Upholstery

American Thread Co., 260 W. Broadway, New York, N. Y.

Challenge—See Summit Thread Co.

Columbia—See Meyer Thread Works.

Crescent—See Meyer Thread Works.

F. M. C.—See French Thread Mills.

Fremo—See French Thread Mills.

French Thread Mills, Cutler St., Warren, R. I. "F. M. C." "Fremo." "Speedway."

Hub—See Meyer Thread Works.

Japerica—See Seamans & Cobb Co.

Lockstitch—See Meyer Thread Works.

Meyer Thread Works, John C., Lowell, Mass. "Hub," "Crescent," "Columbia," "Rugby," "Lockstitch." (See page 961.)

Royal—See Summit Thread Co.

Rugby—See Meyer & Co.

Seaco—See Seamans & Cobb Co.

Seamans & Cobb Co., Boston, Mass. "Seaco," "Japerica." (See page 775.)

Speedway—See French Thread Mills.

Summit Thread Co., Summit St., East Hampton, Conn. "Royal." "Challenge."

THREAD, UPHOLSTERY—See Thread, Top

THREADING TOOLS—See Tools, Threading

THROTTLE LEVER GRIPS—See Grips, Spark and Throttle Lever

THROTTLE LEVER LOCKS FOR FORDS—See Locks, Spark and Throttle Lever

THROTTLE ROD ANTI-RATTLERS FOR FORDS—See Anti-Rattlers, Spark and Throttle Rod

THROTTLE VALVES—See Valves, Steam Throttle

THRUST BEARINGS FOR FORDS—See Bearings, Drive Gear Ball and Roller Thrust

THUMB NUTS—See Nuts, Thumb

THUMB SCREWS—See Screws, Thumb

TIGHTENERS, STUD BOLT—See Extractors, Stud Bolt

TIGHTENERS, Tire Chain

Dow & Cole, 1178 Elm St., Manchester, N. H. "Spider."

Harp Mfg. Co., Galax, Va.

Hykon Mfg. Co., 153 E. State St., Alliance, O. "Liberty."

Liberty—See Hykon Mfg. Co.

Merchant Corp., M. H., 238 Emma St., Syracuse, N. Y. (See page 1157.)

Powers Mfg. Co., Waterloo, Iowa. (See page 593.)

Specialty Mfg. Co., Arlington, Mass. "Superior."

Spider—See Dow & Cole.

Superior—See Specialty Mfg. Co.

Trantum, F. W., 144 Allen St., Jamestown, N. Y.

Trico Products Corp., 624-28 Ellicott St., Buffalo, N. Y.

Wagner Mfg. Co., Cedar Rapids, Iowa.

TIGHTENING COMPOUNDS—See Compounds, Wood Wheel Tightening

TILTING BODIES—See Bodies, Special Dumping

TILTING WHEEL ATTACHMENTS FOR FORDS—See Attachments, Tilting Wheel

TILTING WHEELS—See Wheels, Steering

TIME CHECKS—See Checks, Brass, Time, Tool and Pay

TIME RECORDERS—See Registers, Autographic and Manifold

TIME RECORDING CLOCKS—See Clocks, Time Recording

TIME STAMPS—See Stamps, Time

TIMER BRUSHES FOR FORDS—See Brushes, Timer

TIMER ELEVATING ATTACHMENTS FOR FORDS—See Brackets, Timer Elevating

TIMER ELEVATING BRACKETS FOR FORDS—See Brackets, Timer Elevating

TIMER GRINDERS FOR FORDS—See Grinders, Timer

TIMER TERMINALS FOR FORDS—See Terminals, Timer

TIMER WIRE GUARDS FOR FORDS—See Guards, Timer Wire

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"I X L" Shortproof Timer for FORDS

No Exposed Wires.
No Exposed Terminals.
No Possibility of Short Circuits.
No Broken Connections or any Current Leakage.
Seamless Bakelite Case.
Replaceable Magnusite Bakelite Ring.
Flexible Metal Conduit.

Price of I X L Shortproof Timer complete with wires as illustrated, and also roller assembly—$6.50.

DEALERS AND JOBBERS:—Write for details. Will be sold through regular channels only as rapidly as Jobbers' connections are established.

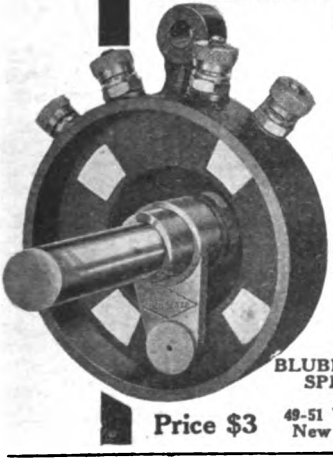
ECLIPSE SPECIALTY MANUFACTURING CO. 549 W. Washington Blvd. CHICAGO, ILL.

The BLUBLAZE TIMER

FOR FORD CARS

Terminals are Sealed

The only practical way to build a timer is of Condensite, same as all other automobile timers. The Condensite shall and Carbon Brush will do for the Ford what a magneto does for all other gas engines. Its principles and construction of Condensite is far superior to all other makes of Ford Timers, giving positive ignition and built to last indefinitely, same as a high grade magneto does.



Jobbers Dealers

A pleased and satisfied customer means repeat orders. Sell the Blublaze Timer and double your sales. Write for full particulars. Our proposition is good.

Price $3

BLUBLAZE MOTOR SPECIALTIES CORP.
49-51 West 66th St.
New York, N. Y.

DOUBLE SERVICE

The Big Feature of This Timer

RANDALL'
DOUBLE **TIMER** SERVICE

Lasts twice as long as the ordinary timer. No "shorts" or misfires—working surface is turned away from engine, thus avoiding oil splash and grit. Made of absolute non-conducting material. Removable dust and oil proof cap. No pins, springs or rollers to rust, break and wear out. Compare the price with others—$2.50.

JOBBERS AND DEALERS: Write for terms on this sure and quick seller. EVERY Ford and Fordson owner a ready prospect.

DUFF DISTRIBUTING CO., Inc.
2 Rector Street New York City

Meyer Auto Threads
Spool Silks and Tufting Twines

You will always be pleased when you use the Meyer threads and ready wound bobbins. Also Diamond spool silks and Meyer tufting twine, and seaming cord. They are the longest and strongest in the world or no sale. Samples for the asking.

Manufactured by the

John C. Meyer Thread Co.
LOWELL, MASS.

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TIMERS, Ignition or Spark

(See also Systems, Battery Ignition)

Almy Water Tube Boiler Co., ft. Rhoades St., Providence, R. I.

Benford Auto Products, Inc., Box H., Mt. Vernon, N. Y. "Monarch."

Boicourt-Lopez Mfg. Co., San Antonio, Tex.

Capitol Tool & Die Works, 1100 Oakdale Ave., Chicago, Ill. "Star."

Connecticut Telephone & Electric Co., Meriden, Conn.

Cuno Engineering Corp., 80 S. Vine St., Meriden, Conn.

Heco—See Heinze Electric Co.

Heinze Electric Co., Lawrence St., Lowell, Mass. "Heco."

Herz, 182 Locust Ave., New York, N. Y. (See page 713.)

Inter-State Machine Products Co., 56 Allen St., Rochester, N. Y. "Leavitt," "Uncas."

Klahn—See Mosler & Co.

Leavitt—See Inter-State Machine Co.

Lundgren Mfg. Co., Hale Bldg., Philadelphia, Pa.

Milwaukee Auto Engine & Supply Co., Milwaukee, Wis. (See page 316.)

Modern Tool & Stamping Co., 311-17 S. Clinton St., Chicago, Ill.

Monarch—See Benford Mfg. Co.

Mosler & Co., A. R., Mt. Vernon, N. Y. "Klahn," "Umph."

New York Coil Co., 338-40 Pearl St., New York, N. Y. "Rhoades."

Rhoades—See New York Coil Co.

Sintz—See Wilmarth & Morman Co.

Splitdorf Electrical Co., 98 Warren St., Newark, N. J.

Star—See Capitol Tool & Die Works.

Umph—See Mosler & Co.

Uncas—See Inter-State Machine Co.

Wilmarth & Morman Co., 1179 Monroe Ave., N. W., Grand Rapids, Mich. "Sintz."

TIMERS, Ignition or Spark, for Fords

(See also Systems, Single Spark)

A. E.—See Chicago Automotive Engineering Corp.

A-K—See Angsten-Kox Co.

Accurate Machine Mfg. Co., 234 Fifth Ave., S., Minneapolis, Minn.

Aero Mfg. Co., 9 S. Clinton St., Chicago, Ill. "Sure Shot."

American Automobile Accessories, 1853 N. Tripp Ave., Chicago, Ill. "Shortless."

Anco—See Monarch Tool & Machinery Co.

Anco—See Anderson Co.

Anderson Co., 232 St. Joseph St., South Bend, Ind. "Anco."

Angsten-Kox Co., 221-23 W. Randolph St., Chicago, Ill. "Anco."

Apco Mfg. Co., Providence, R. I.

Arrow Tool Co., 220 Channon St., Bridgeport, Conn.

Auto Components, 56 E. Randolph St., Chicago, Ill. "Red Star."

Automotive Specialty Sales Co., Dallas, Tex. "Parker."

B. K. F. Corp., 20 E. Jackson Blvd., Chicago, Ill. (See page 963.)

Bay State Pump Co., 500 E. First St. (S. Boston), Boston, Mass.

Bemus—See Motor Specialties Co.

Benford Auto Products, Mt. Vernon, N. Y. "Monarch."

Bestofall—See Jonas, C. N. & F. W.

Blublaze Motor Specialties Corp., 49-51 W. 66th St., New York, N. Y. (See page 961.)

Blue Ribbon—See Ferro Mfg. Co.

Chicago Automotive Engineering Corp., 334-38 N. Irving Ave., Chicago, Ill. "A. E."

Connecticut Telephone & Electric Co., Meriden, Conn.

Cook Sure-Fire Commutator Co.—See Southern Equipment Co.

Cuno Engineering Corp., 80 S. Vine St., Meriden, Conn.

Cyclone—See Holland Brass Works.

Dean—See Tisch Auto Supply Co.

Duff Distributing Co., 2 Rector St., New York, N. Y. "Randall." (See page 961.)

Dunham Co., Thos., Aurora, Ill. (See page 167.)

Duntley, J. W., 1004 Michigan Ave., Chicago, Ill.

Duplex Products Co., 3520 Princeton Ave., Chicago, Ill.

Eclipse Specialty Mfg. Co., 549 W. Washington Blvd., Chicago, Ill. "IXL." (See page 961.)

Economy Timer Co., Box AX, Norwalk, Conn. (See page 965.)

Efemco—See Foster, Merriam & Co.

Ferro Mfg. Co., 2011 Michigan Ave., Chicago, Ill. "Blue Ribbon." (See page 1197.)

Ford Mfg. Co., Howard, Coldwater, Mich.

Foster, Merriam & Co., Meriden, Conn. "Efemco." (See page 821.)

Gladiator Co., Auburn, Ind.

Goodrich-Lenhart Mfg. Co., Hamburg, Pa. (See page 721.)

Gould-Mersereau Co., 48 W. 38th St., New York, N. Y.

Herz, 182 Locust Ave., New York, N. Y. (See page 713.)

Holland Brass Works, 616-18 W. Monroe St., Chicago, Ill. "Cyclone."

Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributer for Cuno Timers.) (See page 1187.)

Holmes Special Tool Co., 38 Canal St., New Haven, Conn. "Pourier."

Howe Lamp & Mfg. Co., 115-23 E. Ontario St., Chicago, Ill.

I. I.—See Improved Ignition Co.

IXL—See Eclipse Specialties Mfg. Co.

Improved Ignition, Inc., 200 Cannon St., Bridgeport, Conn. "I. I." (See page 1161.)

International Metal Mfg. Co., Wayne Ave. & Berkley St., Philadelphia, Pa.

J. & B. Mfg. Co., Pittsfield, Mass. (See page 739.)

J. P. Specialty, 53 W. Jackson Blvd., Chicago, Ill. "Pep."

Jack Rabbit Ignition Co., 1062 Palmer Ave., E., Detroit, Mich.

Jambor Mfg. Co., Milwaukee, Wis. (See page 965.)

Jonas C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representative for Necedah Mfg. Co., Necedah, Wis. "Bestofall.") (See page 689.)

Kales Stamping Co., 1663 W. Lafayette Blvd., Detroit, Mich. (See page 641.)

Kant Short Timer Co., 211 Park St., New Haven, Conn. (See page 983.)

Lacey Co., Grand Rapids, Mich. "Yankee." (See page 527.)

Libby Auto Accessories, Inc., 4 W. 125th St., New York, N. Y. "L. & L." (See page 1119.)

Life—See Mechanical Production Co.

Master—See Reidville Mfg. Co.

McCulloch Mfg. Co., 216 High St., Boston, Mass. (See page 981.)

Mechanical Production Co., M. & M. Bank Bldg., Milwaukee, Wis. "Life."

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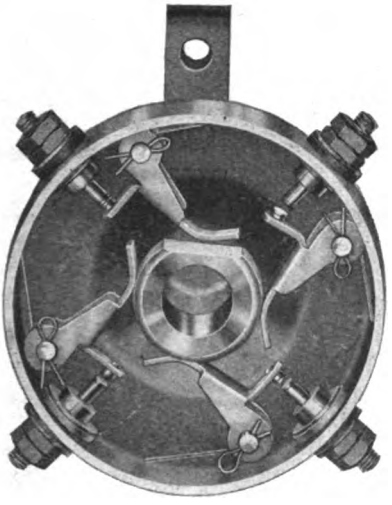
B. K. F.

HIGH EFFICIENCY

PRODUCTS



The B. K. F.

Make and Break Timer for Ford Cars, Trucks and Fordson Tractors

Make and Break construction is used in all high grade ignition apparatus. It eliminates missing caused by worn roller type timers and insures a fat, quick, positive spark at the right instant—saves the battery by cutting off the current as soon as contact is made.

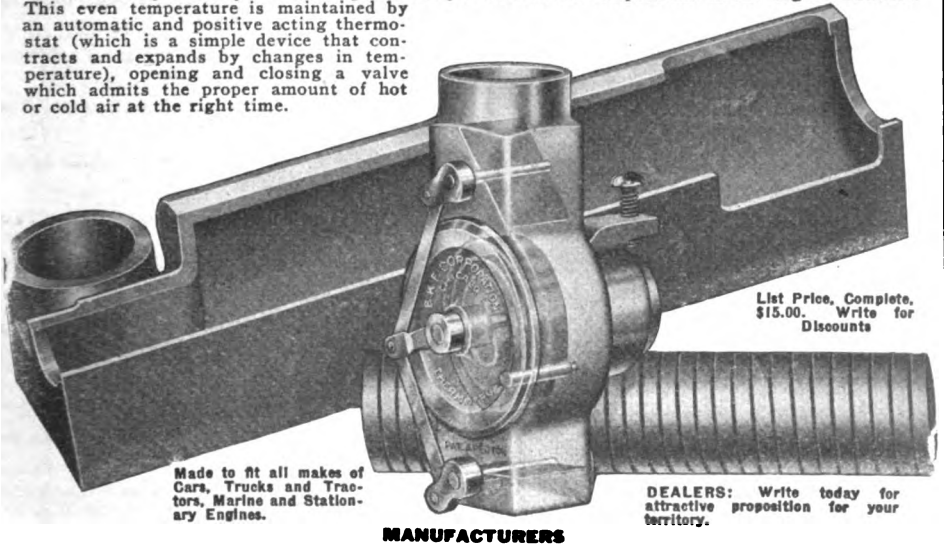
No oiling required—no pitting of contact points—no steel or fibre rollers to wear flat and cause trouble—nothing to get out of order or adjustment.

LIST PRICE $4.00

THE B. K. F. THERMOTROL

The B. K. F. Thermotrol is a device which gets greatest mileage and efficiency from gasoline—maintains smooth power control and retains body and life of oil in crankcase.

This is accomplished by maintaining an even pre-determined temperature in the engine manifold. This even temperature is maintained by an automatic and positive acting thermostat (which is a simple device that contracts and expands by changes in temperature), opening and closing a valve which admits the proper amount of hot or cold air at the right time.



List Price, Complete, $15.00. Write for Discounts

Made to fit all makes of Cars, Trucks and Tractors, Marine and Stationary Engines.

DEALERS: Write today for attractive proposition for your territory.

MANUFACTURERS

B. K. F. CORPORATION

CHICAGO **20 E. Jackson Boulevard** **ILLINOIS**

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TIMERS, Ignition or Spark, for Fords (Continued)

Meikle Mfg. Co., Springfield, Ill. "Springfield."

Metalware Corp., 228 W. Superior St., Chicago, Ill. (See page 1161.)

Mil-Mac Mfg. Co., 16th St. & Glenwood Ave., Philadelphia, Pa. "Never-Miss."

Mill City Co., Minneapolis, Minn.

Milwaukee Auto Engine & Supply Co., Milwaukee, Wis. (See page 316.)

Monarch—See Benford Auto Products.

Monarch Tool & Machinery Co., 522 S. Clinton St., Chicago, Ill. "Anco."

Motor Specialties Co., Waltham, Mass. "Bemus."

Necedah Mfg. Co., Necedah, Wis. "Bestedall." (See page 689.)

Nelson Timer Corp., Monadnock Bldg., Chicago, Ill.

Never-Miss—See Mil-Mac Mfg. Co.

Parker—See Automotive Specialty Sales Co.

Pep—See J. P. Specialty Co.

Pourier—See Holmes Special Tool Co.

Randall—See Duff Distributing Co.

Recto Mfg. Co., 23 W. Third St., Cincinnati, O.

Red Line, Inc., Grand Rapids, Mich. (See page 1047.)

Red Star—See Auto Components.

Reidville Mfg. Co., Waterbury, Conn. "Master."

Riblet Mfg. Co., Maxwell Bldg., Long Beach, Cal. "Rimco." (See page 1123.)

Rimco—See Riblet Mfg. Co.

Schofield Mfg. Co., Cleveland, O.

Service Mfg. Co., 211-13 Centre St., New York, N. Y.

Shortless—See American Automobile Accessories.

Signalite Mfg. Co., 522 S. Clinton St., Chicago, Ill. "Signo."

Signo—See Signalite Mfg. Co.

Southern Equipment Co., 26 Court St., Brooklyn, N. Y. (Sole Distributors for Cook Sure Fire Commutator Co., Brooklyn, N. Y.) (See page 983.)

Springfield—See Meikle Mfg. Co.

Staff, J. Wadsworth, 122 S. Michigan Ave., Chicago, Ill. (Dealers.) (See pages 1177 and 1193.)

Sure Shot—See Aero Mfg. Co.

Thomas Andrews Corp., Waukegan, Ill. (See page 723.)

Tisch Auto Supply Co., 522 Turner Ave., Grand Rapids, Mich. "Dean."

Trico Products Corp., 624-28 Ellicott St., Buffalo, N. Y.

U. S. Metal Goods Co., 5211 Euclid Ave., Cleveland, O. (See page 685.)

U. & J. Carburetor Co., 507 W. Jackson Blvd., Chicago, Ill.

Visible Commutator & Specialties Co., Highlands, N. J.

Vulcan Die Casting Corp., 1120 W. Belden Ave., Syracuse, N. Y. (See page 1105.)

Walker Accessories, 1991 Broadway, New York, N. Y.

Wayne Engineering Co., Honesdale, Pa.

Winters Co., Leonard R., 5315 N. Second St., Philadelphia, Pa.

Wisconsin Timer Mfg. Corp., Menomonee Falls, Wis. (See page 965.)

Yankee—See Lacey Co.

Zenite Metal Co., 203 N. West St., Indianapolis, Ind. (See page 637.)

TIMERS, Motor Boat

Bemus—See Motor Specialties Co.

Hers, 182 Locust Ave., New York, N. Y. (See page 718.)

King Bros., 439 E. Water St., Syracuse, N. Y.

Milwaukee Auto Engine & Supply Co., Milwaukee, Wis. (See page 316.)

Motor Specialties Co., Waltham, Mass. "Bemus."

TIMERS, Tractor

McCulloch Mfg. Co., 216 High St., Boston, Mass. (See page 981.)

Milwaukee Auto Engine & Supply Co., Milwaukee, Wis. (See page 316.)

U. & J. Carburetor Co., 507 W. Jackson Blvd., Chicago, Ill.

TIPPERS, OIL CAN AND BARREL—See Holders or Tippers, Oil Can and Barrel

TIPS, BURNER—See Burners, Acetylene

TIRE ALARMS—See Alarms, Tire

TIRE BANDAGE WRAPPING MACHINES—See Machines, Tire Bandage Wrapping

TIRE BANDS—See Bands, Non-Skid Truck

TIRE BOLTS—See Bolts, Stove

TIRE BUFFERS—See Machines, Electric Tire Buffing

TIRE BUFFING MACHINES, ELECTRIC—See Machines, Electric Tire Buffing

TIRE BUILDING STANDS—See Stands, Tire Building

TIRE CARRIERS—See Holders, Tire

TIRE CASES—See Covers, Spare Tire

TIRE CEMENT—See Cement, Tire Repair

TIRE CHAIN ADJUSTERS—See Tighteners, Tire Chain

TIRE CHAIN FASTENERS—See Fasteners, Tire Chain

TIRE CHAIN LOCKS—See Locks, Tire Chain.

TIRE CHAIN REPAIR LINKS—See Links, Tire Chain Repair

TIRE CHAIN SPRINGS—See Tighteners, Tire Chain

TIRE CHAIN TIGHTENERS—See Tighteners, Tire Chain

TIRE CHAIN TOOLS—See Tools, Tire Chain Repair

TIRE CHAINS—See Chains or Grips, Non-Skid

TIRE CHANGERS—See Machines, Tire Removing and Replacing

TIRE CORES—See Molds, Tire Vulcanizing

TIRE COVERS—See Covers, Spare Tire

TIRE CURING BAGS—See Bags, Steam Tire Curing

TIRE DEFLATING TOOLS—See Tools, Tire Deflating

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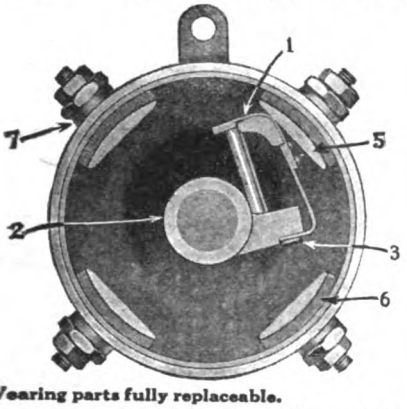
Economy Timers

FOR FORD CARS

Require no oil—Will not short circuit



Wearing parts fully replaceable.
A positive wiping contact.

Make starting easy

Sold only on a money-back GUARANTEE

ECONOMY TIMER CO.
Box AX NORWALK, CONN.

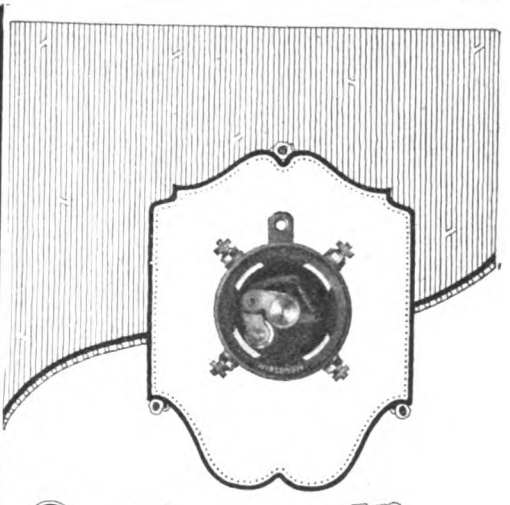
JAMBOR TIMERS

FOR FORD CARS
without a fault

A high grade timer of standard design at a low cost. 26 years' stamping experience behind its production.

Territory now open.
Write for information.

JAMBOR MFG. CO.
Milwaukee, Wis.



Wisconsin TIMER

Materials and design that have proven themselves the best under actual use coupled with skilled and accurate workmanship give the Wisconsin Timer its longer life of trouble-proof service.

Our sales policy provides a liberal margin of profit and the co-operation we extend to jobbers and dealers has built for us a reputation of fair dealing and good will.

Wisconsin Timers are packed in durable and attractive three color cartons. Retail price, $2.00.

Manufactured by
WISCONSIN TIMER MFG. CORP.
Menomonee Falls, Wisconsin

Sales Representatives
J. WADSWORTH STAFF
122 S. Michigan Ave., Chicago, Ill.

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TIRE FABRICS—See Fabric, Cotton Tire

TIRE FILLERS—See Compounds, Tire Filling

TIRE FILLING COMPOUNDS—See Compounds, Tire Filling

TIRE GAGES—See Gages, Tire

TIRE HOLDERS—See Holders, Tire

TIRE INFLATERS—See Pumps; also Tanks

TIRE INFLATING TANKS—See Tanks, Tire Inflating

TIRE INSPECTING MACHINES—See Machines, Tire Inspecting

TIRE IRONS—See Tools, Tire

TIRE KITS—See Kits, Tire Repair

TIRE KNIVES—See Knives, Tire Repair

TIRE LOCKS—See Locks, Spare Tire

TIRE MASTICS—See Compounds, Tire Repair

TIRE MICA—See Talc, Tire

TIRE MOLDS—See Molds, Tire Vulcanizing

TIRE PAINTS—See Paints, Rubber

TIRE PATCHES—See Patches, Tire

TIRE PLASTICS—See Compounds, Tire Repair

TIRE PLUGS—See Plugs, Tire

TIRE POWDER—See Talc, Tire

TIRE PRESERVING COMPOUNDS—See Compounds, Tire Preserving

TIRE PRESSES—See Presses, Tire

TIRE PRESSURE GAGES—See Gages, Tire Pressure

TIRE PROTECTORS—See Treads, Tire

TIRE PUMP CONNECTION WASHERS—See Washers, Tire Pump Connection

TIRE PUMP CONNECTIONS—See Connections, Tire

TIRE PUMPS—See Pumps

TIRE PUTTY—See Compounds, Tire Repair

TIRE RACKS—See Racks, Metal Tool, Stock and Tire

TIRE REMOVING MACHINES—See Machines, Tire Removing and Replacing

TIRE REPAIR CEMENT—See Cement, Tire Repair

TIRE REPAIR COMPOUNDS—See Compounds, Tire Repair

TIRE REPAIR KITS—See Kits, Tire Repair

TIRE REPAIR KNIVES—See Knives, Tire Repair

TIRE REPLACING MACHINES—See Machines, Tire Removing and Replacing

TIRE RETAINERS—See Fillers, Tire Bead

TIRE SAVING JACKS—See Jacks, Tire Saving

TIRE SKIVING MACHINES—See Machines, Tire Skiving

TIRE SLEEVES—See Sleeves, Tire

TIRE SPREADERS—See Tools, Tire

TIRE STITCHERS—See Machines, Double Tread Tire Stitching

TIRE STITCHING MACHINES—See Machines, Double Tread Tire Stitching

TIRE STRAPS—See Straps, Leather

TIRE TALC—See Talc, Tire

TIRE TANKS—See Tanks, Tire Inflating

TIRE TAPE—See Tape, Insulating and Tire

TIRE TOOLS—See Tools, Tire; also Tools, Tire Valve Rethreading

TIRE TREAD ROLLING TOOLS—See Tools, Tire Tread Rolling & Peeling

TIRE TREADS—See Treads, Tire

TIRE VALVE REMOVERS—See Machines, Tube Deflating and Valve Removing

TIRE VALVE TOOLS—See Tools, Tire Valve Rethreading

TIRE VALVES—See Valves, Tire

TIRE VULCANIZERS—See Vulcanizers

TIRE VULCANIZING TOOLS—See Tools, Tire Vulcanizing

TIRE WRAPPING MACHINES—See Machines, Tire Bandage

TIRES, Airplane

Goodrich Co., B. F., S. Main St., Akron, O.

Goodyear Tire & Rubber Co., Akron, O. (See page 1015.)

United States Tire Co., 1790 Broadway, New York, N. Y. "Usco."

Usco—See United States Tire Co.

TIRES, CUSHION—See Tires, Special

TIRES, Leather

(For Leather Treads—See Treads, Detachable)

Brictson Mfg. Co., 14th & Farnum Sts., Omaha, Neb.

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Dealers Who Feature

Keystone

Cords

Make Big Profits and Satisfied Customers

Keystone Cords

Are Guaranteed for

8,000 Miles of Service

Write for Details

Keystone Tire & Rubber Co.

Keystone Bldg., Broadway and 62d St.

NEW YORK

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TIRES, Motorcycle

Continental Rubber Works, 190 Liberty St., Erie, Pa. "Vitalic."
Firestone Tire & Rubber Co., Miller & Sweitzer Aves., Akron, O.
Goodrich Co., B. F., S. Main St., Akron, O.
Goodyear Tire & Rubber Co., Akron, O. (See page 1015.)
Pennsylvania Rubber Co., Jeannette, Pa.
Savage Tire Co., Main & Sicard Sts., San Diego, Cal.
Trent Rubber Co., 105-11 Enterprise St., Trenton, N. J.
United States Tire Co., 1790 Broadway, New York, N. Y. "Usco."
Usco—See United States Tire Co.
Vitalic—See Continental Rubber Works.

TIRES, Pneumatic

(See also Tubes, Inner)

Achilles Rubber & Tire Co., Binghamton, N. Y.
Acme Rubber Mfg. Co., Trenton, N. J.
Advance Rubber Co., 21 Gardner Ave., Brooklyn, N. Y. "Top Notch."
Ajax Rubber Co., 220 W. 57th St., New York, N. Y. (See page 1009.)
Allen Tire & Rubber Co., 510 Hamilton St., Allentown, Pa.
Allsteel Ridewell Tire & Rubber Co., Lindsey Bldg., Dayton, O. "Artyr."
Amazon Rubber Co., Akron, O.
American—See Mansfield Tire & Rubber Co.
American Rubber & Tire Co., 100 Beach St., Akron, O.
Anchor—See New Jersey Car Spring & Rubber Co.
Angola Tire & Rubber Co., N. Division & Pine Sts., Buffalo, N. Y.
Arabian—See Defiance Tire Factories.
Archer Cord Tire & Rubber Co., 711-17 15th Ave., N. E., Minneapolis, Minn.
Armstrong Rubber Co., 132-42 Monroe St., Garfield, N. J.
Artyr—See Allsteel Ridewell Tire & Rubber Co.
Auto Tire Sales Co., 1346-48 Michigan Ave., Chicago, Ill. "Lyon." (See page 143.)
Batavia Rubber Co., Batavia, N. Y. "Merlin."
Beacon Tire Co., Main & River Sts., Beacon, N. Y.
Bergougnan Rubber Corp., 2000 E. State St., Trenton, N. J.
Biltwell Tire & Rubber Co., Akron, O. "Hard-Wear."
Black Hawk Tire & Rubber Co., Des Moines, Iowa.
Blekre Tire & Rubber Co., St. Paul, Minn. (See page 1189.)
Bowers Rubber Works, 68-70 Sacramento St., San Francisco, Cal.
Bowling Green Rubber Co., 1202 Prospect Ave., Toledo, O.
Braender Rubber & Tire Co., Rutherford, N. J. "Bull Dog." (See page 1207.)
Broadway Tire Jobbers, Inc., 250 W. 54th St., New York, N. Y. (See page 61.)
Brunswick - Balke - Collender Co., 622-33 S. Wabash Ave., Chicago, Ill. (See page 1171.)
Buckskin—See Tuscan Tire & Rubber Co.
Bucyrus—See Henderson Tire & Rubber Co.
Bull Dog—See Braender Rubber & Tire Co.
Burdick Tire & Rubber Co., Noblesville, Ind.
Butler Bros., 426 W. Randolph St., Chicago, Ill. "Sheridan."
Canton-Blackstone Co., Canton, O. "Knight."
Capitol—See National Tire & Rubber Co.
Carlisle Tire Corp., Fairfield Ave., Stamford, Conn.
Carspring—See New Jersey Car Spring & Rubber Co.
Century-Plainfield Tire Co., Plainfield, N. J.
Century Rubber Works, 1346 Rawsom St., Chicago, Ill.
Champion—See McLean Tire & Rubber Co.
Channon Co., H., 150 N. Market St., Chicago, Ill. "Gripwell."
Cleveland—See Standard Tire Co.
Climax—See Zee Zee Rubber Co.
Clingstone—See Lancaster Tire & Rubber Co.
Coast Tire & Rubber Co., 43th Ave. & 12th St., Oakland, Cal.
Columbia Tire & Rubber Co., Elm & Railroad Sts., Columbiana, O. "Para-Bell."
Columbus Tire & Rubber Co., 555 W. Goodale St., Columbus, O.
Combination Rubber Mfg. Co., Bloomfield, N. J. "Viking."
Conestoga Tire & Rubber Co., 46 N. Prince St., Lancaster, Pa. (See page 883.)
Congo—See Corona Cord Tire Co.
Continental Rubber Works, 1902 Liberty St., Erie, Pa. "Vitalic."
Converse Rubber Shoe Co., Malden, Mass. "Tuff-E-Nuff."
Cord Tire Corp., Chester, W. Va. "Superior."
Corduroy—See Grand Rapids Tire & Rubber Corp.
Cornhusker—See Nebraska Tire & Rubber Co.
Corona Cord Tire Co. (E. Butler), Butler, Pa. "Congo."
Cortland Tire & Rubber Co., 242 Cortland St., Belleville, N. J.
Crown Tire & Rubber Co., Ralston, Neb.
Cumberland Tire & Rubber Co., 26th & Courtney Sts., Louisville, Ky.
Cunningham & Berrien, 25 W. 43rd St., New York, N. Y. (Eastern Distributors for "Perfection" Tires.) (See page 419.)
Cupples Co., Seventh & Spruce Sts., St. Louis, Mo.
Dayton Pneumatic Tool Co., Hartford St. & Big Four R. R., Dayton, O. "Green."
Dayton Rubber Mfg. Co. of N. Y., 227 W. 57th St., New York, N. Y. (Sole Distributors for Dayton Rubber Mfg. Co., Dayton, O.)
Dayton Rubber Mfg. Co.—See Dayton Rubber Mfg. Co. of N. Y.
De Luxe—See Goodrich Co.
Defiance Tire Factories, 426 Randolph St., Chicago, Ill., "Arabian."
Delion Tire & Rubber Co., Baltimore, Md. (See page 1015.)
Denman-Myers Cord Tire Co., Engineers Bldg., Warren, O.
Diamond Rubber Co., Akron, O.
Double Fabric Tire Co., 60 W. Ninth St., Auburn, Ind. "W. K. M."
Doss Rubber & Tube Co., Murphy Ave., Atlanta, Ga.
Doughty Tire Co., 115 Wickenden St., Providence, R. I.
Dowse Rubber Co., 122 S. Michigan Ave., Chicago, Ill.
Doyle Tire & Rubber Co., Akron, O.
Dry Climate Tire Mfg. Co., Arvada, Colo. "Victory."
Dryden Rubber Co., 1014 S. Kildare St., Chicago, Ill.
Dunlop Tire & Rubber Corp. of America, Buffalo, N. Y. (See page 1137.)
Eagle Puncture Proof Tire Co., 1662 Broadway, New York, N. Y.
Eagle Rubber Co., Bloomfield, N. J.
Economy Rubber Co., Johnstown Trust Bldg., Akron, O.

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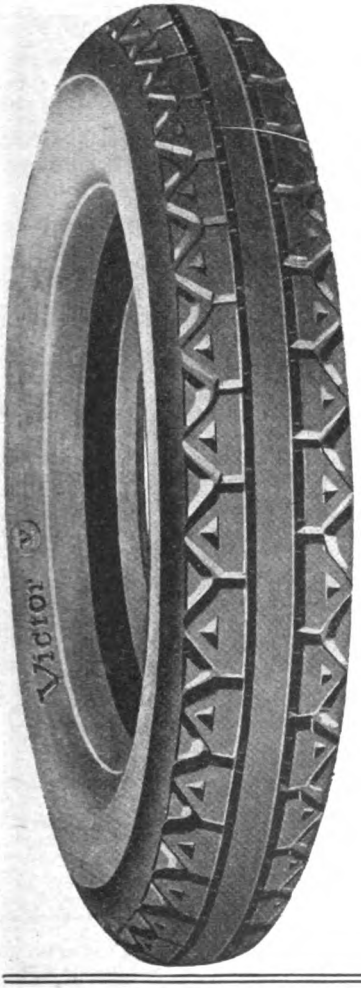
Victor

FABRIC AND CORD TIRES



Victor is a Quality line of tires and tubes at a popular price.

Dealers can back up the Victor line with 100% confidence, knowing that it will stand up against any competition, regardless of price or quality.

The Victor line means more profit to the dealer. It is an exclusive sales proposition.

The Victor line consists of over-size cord and fabric casings, red and gray tubes and an over-size cord special tube.

We educate dealers' salesmen, show them how and why Victor Tires are superior and train them how to present these arguments to your trade.

Dealers:—The Victor proposition is for One Dealer in each town. Write Today.

The Victor Rubber Co.

SPRINGFIELD, OHIO

Builders of Rubber Tires for over 21 years.

Factory Branches: ***Chicago, 1720 S. Michigan Ave.*** ***New York, 1991 Broadway.***

MILEAGE HOGS

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TIRES, Pneumatic (Continued)

Edison Tire & Rubber Co., 1305 Michigan Ave., Chicago, Ill.
Ehman Tire & Rubber Co., 176 N. Michigan Ave., Chicago, Ill.
Empire Rubber & Tire Co., Mulberry St. & Clinton Ave., Trenton, N. J.
Erie Tire & Rubber Co., First St., Sandusky, O.
Eureka Tire Co., Broad St. Bank Bldg., Trenton, N. J.
Excel Rubber Co., Wadsworth, O. "X-L."
Falls Rubber Co., Cuyahoga Falls, O.
Federal Rubber Co. (Cudahy), Milwaukee, Wis.
Fidelity Tire & Rubber Co., Massillon, O.
Firestone Tire & Rubber Co., Miller & Sweitzer Aves., Akron, O.
First National Tire & Reliner Co., 55 Compau Ave., N. W., Grand Rapids, Mich. "Jaxon."
Fisk Rubber Co. of New York, Chicopee Falls, Mass. (See page 1015.)
Formost—See United Motors Service.
Forster Tire & Rubber Co., Millersburg, O.
Fort Wayne Tire & Rubber Mfg. Co., People's Trust Bldg., Fort Wayne, Ind. "Wayne."
G & J Tire Co., 1790 Broadway, New York, N. Y.
General Tire & Rubber Co., E. Market St., Akron, O. "Jumbo."
General Tire & Rubber Co., 230 N. 15th St., Philadelphia, Pa.
Georgia Tire & Rubber Co., Atlanta, Ga.
Gillette Rubber Co., Eau Claire, Wis.
Glamorgan Tire & Rubber Corp., 72 E. Spring St., Columbus, O.
Globe Rubber Tire Mfg. Co., 1851 Broadway, New York, N. Y. (See page 979.)
Goodrich Co., B. F., S. Main St., Akron O. "Silvertown," "De Luxe."
Goodyear Tire & Rubber Co., Akron, O. (See page 1015.)
Gordon Tire & Rubber Co., 1200 Seventh St., S. W., Canton, O. "H. B. McMasters."
Grand Rapids Tire & Rubber Corp., Pearl & Ottowa Sts., Grand Rapids, Mich. "Corduroy."
Great Republic Tire & Rubber Mfg. Co., Equity Bldg., Muskogee, Okla.
Green—See Dayton Pneumatic Tool Co.
Greyhound—See Ideal Tire & Rubber Co.
Gripwell—See Channon Co.
Grow Tire Co., 323 Columbus Ave., Boston, Mass.
H. B. McMasters—See Gordon Tire & Rubber Co.
Hanes Rubber Co., Winston-Salem, N. C.
Hard-Wear—See Biltwell Tire & Rubber Co.
Hardman Rubber Corp., New Brunswick, N. J. "Sure-Grip."
Hartford Rubber Co., 1720 Broadway, New York, N. Y.
Hawkeye Tire & Rubber Co., 215 E. Third St., Des Moines, Ia. "Santa Fe."
Haywood—See Zee Zee Rubber Co.
Henderson Tire & Rubber Co., 23-31 W. 43d St., New York, N. Y. "Bucyrus." (See page 973.)
Hester Tire & Rubber Co., 5200 Euclid Ave., Cleveland, O.
Hewitt Rubber Co., 240 Kensington Ave., Buffalo, N. Y.
Highway—See National Tire & Rubber Co.
Holyoke—See New England Tire & Rubber Co.
Hood Rubber Products Co., Watertown, Mass. (See pages 969 and 970.)
Horseshoe—See Racine Auto Tire Co.
Howe Rubber Co., Codwise Ave., New Brunswick, N. J.
Hubbell Tire & Rubber Co., 6545 Carnegie Ave., Cleveland, O.
Huskie—See United Rubber Co.
Ideal Tire & Rubber Co., 1615 Euclid Ave., Cleveland, O. "Greyhound."
Illinois Tire Co., First Nat'l Bank Bldg., Chicago, Ill.
India Tire & Rubber Co., Akron, O.
Inland Rubber Co., 146 W. 27th St., Chicago, Ill.
Interlocking Cord Tire Co., Everett Bldg., Akron, O.
International India Rubber Corp., Ewing Ave. & Vandalia R. R., South Bend, Ind. "South Bend."
Iowa Cord Tire Co., Fleming Bldg., Des Moines, Ia.
J. & D.—See McClaren Rubber Co.
Jasper Tire & Rubber Co., 320 Main St., Jasper, Ind.
Jaxon—See First National Tire & Reliner Co.
Johnstone Tire & Rubber Co., La Porte, Ind.
Jordan Tire & Rubber Co., Mallers Bldg., Chicago, Ill.
Jumbo—See General Tire & Rubber Co.
Keaton Tire & Rubber Co., 1337 S. Flower St., Los Angeles, Cal.
KelBro—See Kelley Tire Co.
Kelley Tire Co., Drexel Bldg., Philadelphia, Pa. "KelBro."
Kelley Tire & Rubber Co., West Haven, Conn.
Kelly-Springfield Tire Co., 1710 Broadway, New York, N. Y.
Kenyon Co., C., 754 Pacific St., Brooklyn, N. Y. (See page 760.)
Keystone Rubber Mfg. Co., 135 E. 11th St., Erie, Pa.
Keystone Tire & Rubber Co., Keystone Bldg., New York, N. Y. (See page 967.)
Knight—See Canton-Blackstone Co.
Knox Tire & Rubber Co., Mt. Vernon, O.
Kokomo Rubber Co., 1042 S. Main St., Kokomo, Ind.
Lancaster Tire & Rubber Co., Long & Fourth Sts., Columbus, O. "Clingstone," "Wiregrip."
Lee Tire & Rubber Co., 245 W. 55th St., New York, N. Y.
Lehigh Tire & Rubber Co., Newcastle, Pa.
Liberty Tire & Rubber Co., Green Bay, Wis.
Lincoln Highway Tire Co., Fulton, Ill. (See page 1185.)
Lion Tire & Rubber Corp., E. Union Street, Lafayette, Ind.
Long-Wear Tire & Rubber Co., Anderson, Ind.
Ludington Rubber Co., Trust Co. Bldg., Ludington, Mich.
Lyon—See Auto Tire Sales Co.
McClaren Rubber Co., W. Palmer St., Charlotte, N. C. "J. & D."
McClurg—See Midland Tire & Rubber Co.
McCreary Tire & Rubber Co., 15th & School Sts., Indiana, Pa.
McGraw Tire & Rubber Co., Euclid Bldg., Cleveland, O.
McLean Tire & Rubber Co., East Liverpool, O. "Champion."
Madison Tire & Rubber Co., 20 W. 60th St., New York, N. Y. (See page 1181.)
Majestic Tire & Rubber Co., Cruse & Daly Sts., Indianapolis, Ind.
Malay Rubber Co., 1035 Guardian Bldg., Cleveland, O. (See page 1013.)
Malco Tire & Rubber Co., 30th & Chestnut Sts., Philadelphia, Pa. (See page 1181.)
Mansfield Tire & Rubber Co., Newman St., Mansfield, O. "Ohio," "United," "American."
Marathon Tire & Rubber Co., Cuyahoga Falls, O.
Marion Tire & Rubber Co., George & Grand Sts., Marion, O.

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The Henderson Tire—
A Distributor's Franchise
Builds Repeat Business

The Henderson State Right Franchise is a two-fisted, man-size, five-to-six figure money-making opportunity for an aggressive distributor.

The Henderson Tire and Rubber Co. offers an exclusive selling franchise. It embraces an exclusive territory — an exclusive tire and exclusive selling co-operation — with the resulting repeat business.

Integrity is the backbone of Henderson progress — the simple virtue of being right constitutes an impregnable advantage.

An aggressive tire distributor will find this an unusual opportunity to secure an exclusive selling franchise.

If your territory is still open—it will prove good business on your part to become acquainted with the possibilities of the proposition. Suppose you write—let us send you more details.

Henderson Tire and Rubber Corporation

General Sales Offices

23-31 West 43rd St., New York

Factories

Columbus, Ohio

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TIRES, Pneumatic (Continued)

Martin, Jas., 130-34 W. 52nd St., New York, N. Y. (Dealers.) (See page 629.)

Mason Tire & Rubber Co., 802 Lake St., Kent, O.

Master Tire & Rubber Co., Schwind Bldg., Dayton, O.

Merlin—See Batavia Rubber Co.

Meyer Rubber Co., Columbiana, O.

Midco—See Zenith Tire & Rubber Co.

Michelin Tire Co., Milltown, N. J.

Middletown Rubber Co., 80-84 Washington St., Middletown, N. Y.

Midland Tire & Rubber Co., Cambridge Rd., Coshocton, O. "McClurg."

Miller, Chas. E., 1400 S. Meridian St., Anderson, Ind.

Miller Rubber Co., Akron, O. (See page 979.)

Mohawk Rubber Co., E. Market St., Akron, O.

Monarch—See Williams Tire Co.

Monarch Rubber Co., Hartville, O.

Montford Rubber Co., 854 Main St., Buffalo, N. Y. "Wayne."

Mutual Tire & Rubber Co., 9 E. 40th St., New York, N. Y.

Na-Peer Tire Co., Akron, O.

Nassau—See Thermoid Rubber Co.

National Rubber Products Corp., 660 N. Broad St., Philadelphia, Pa. "Speedway."

National Tire Co., Trenton, N. J.

National Tire & Rubber Co., East Palestine, O. "Capitol," "Highway," "Olympian," "Roamer," "Record."

Nebraska Tire & Rubber Co., Omaha, Nebr. "Cornhusker."

Needham Tire Co., Charles River, Mass.

New England Tire & Rubber Co., Holyoke, Mass. "Holyoke."

New Jersey Car Spring & Rubber Co., Wayne & Brunswick Sts., Jersey City, N. J. "Carspring." "Anchor."

Norwalk Tire & Rubber Co. (Winnipauk), Norwalk, Conn.

Ohio—See Mansfield Tire & Rubber Co.

Ohio Guaranty Tire & Rubber Co., 5510 Euclid Ave., Cleveland, O. (Sole Distributors for Western Reserve Tire Corp., Cleveland, O. "Reserve.") (See page 1101.)

Oldfield Tire Co., 2045 Euclid Ave., Cleveland, Ohio.

Olympian—See National Tire & Rubber Co.

Orrville Rubber Co., Orrville, O.

Overland Tire & Rubber Co., Omaha, Nebr.

Para-Bell—See Columbia Tire & Rubber Co.

Paramoid—See Pharis Tire & Rubber Co.

Parker Tire & Rubber Co., 2641 Allan Ave., Indianapolis, Ind.

Pennsylvania Rubber Co., Jeannette, Pa.

Perfection Tire & Rubber Co., Fort Madison, Ia.

Pharis Tire & Rubber Co., Newark, O. "Paramoid." (See page 1127.)

Portage Rubber Co., Barberton, O.

Powertown Tire Corp., 955 Main St., Buffalo, N. Y.

Quaker City Rubber Co., 629 Market St., Philadelphia, Pa.

Quality Tire & Rubber Co., Anderson, Ind.

Racine Auto Tire Co., 1215 State St., Racine, Wis. "Horseshoe."

Racine Rubber Co., Asylum Ave., Racine, Wis.

Ramo Tire & Rubber Co., Standard Life Bldg., Pittsburgh, Pa.

Record—See National Tire & Rubber Co.

Republic Rubber Co., Albert St., Youngstown, Ohio.

Reserve—See Ohio Guaranty Tire & Rubber Co.

Revere Rubber Co., 1790 Broadway, New York, N. Y.

Roamer—See National Tire & Rubber Co.

Rotary Tire & Rubber Co., Zanesville, O.

Rubber Co. of America, Hartford Bldg., Chicago, Ill. (Sole Distributors for Wilson Tire & Rubber Co., Springfield, Ill.

Rubber Products Co., Barberton, O. "Stronghold."

Samson Tire & Rubber Corp., 333 W. Pico St., Los Angeles, Cal.

Santa Fe—See Hawkeye Tire & Rubber Co.

Savage—See Spreckels-Savage Tire Co.

Sheridan—See Butler Bros.

Sherman-Stievson Tire & Rubber Co., Elks Bldg., Scottdale, Pa.

Silvertown—See Goodrich Co.

Sioux City Tire & Mfg. Co., Fifth & Plymouth Sts., Sioux City, Ia.

Slohm Tire & Mould Co., 247 Delaware Ave., Buffalo, N. Y.

Smith Rubber & Tire Co., Garfield, N. J.

South Bend—See International India Rubber Corp.

Southern Tire & Rubber Co., 150 Nassau St., New York, N. Y.

Speedway—See National Rubber Products Corp.

Sprague Tire & Rubber Co., 18th & Ozard Sts., Omaha, Neb.

Spreckels-Savage Tire Co., Main & Sicord Sts., San Diego, Cal. "Savage."

Standard Four Tire Co., Dept. D, Keokuk, Ia. (See page 975.)

Standard Tire Co., Willoughby, O. "Tigerfoot."

Stanwood Rubber Co., 13 E. 47th St., New York, N. Y.

Star Rubber Co., 1072 Crozier St., Akron, O.

Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo.

Sterling Tire Corp., Rutherford, N. J.

Stronghold—See Rubber Products Co.

Sturdy Tire & Rubber Co., Trenton, N. J.

Sturges Tire & Rubber Co., Oakland, Cal. "V. K." (See page 647.)

Superior—See Cord Tire Corp.

Supershod—See Surety Tire & Rubber Co.

Super Tread Tire Co., Cedar & Emerick Sts., South Bend, Ind.

Sure Grip—See Hardman Rubber Corp.

Surety Tire & Rubber Co., St. Louis, Mo. "Supershod." (See page 1001.)

Swinehart Tire & Rubber Co., North & Howard Sts., Akron, O.

Syra-Cord—See Syracuse Rubber Co.

Syracuse Rubber Co., Syracuse, N. Y. "Syra-Cord."

Thermoid Rubber Co., Trenton, N. J. "Nassau." (See page 543.)

Tigerfoot—See Standard Tire Co.

Tolivar Tube & Tire Co., 3100 Downing St., Denver, Colo.

Top Notch—See Advance Rubber Co.

Traveler Rubber Co. of Bethlehem, Traveler Ave. & Auburn St., Bethlehem, Pa.

Tred-Wel—See Twin Tube & Rubber Co.

Trent Rubber Co., 105-11 Enterprise St., Trenton, N. J.

Triumph Tire & Rubber Co., 226 W. 56th St., New York, N. Y. (See page 1111.)

Tropical Tire & Rubber Co., 365 Broadway, New York, N. Y.

Tubeless Tire & Rubber Co., Millersburg, O.

Tulsa—See U. S. Compression Inner Tube Co.

Tuff-E-Nuff—See Converse Rubber Shoe Co.

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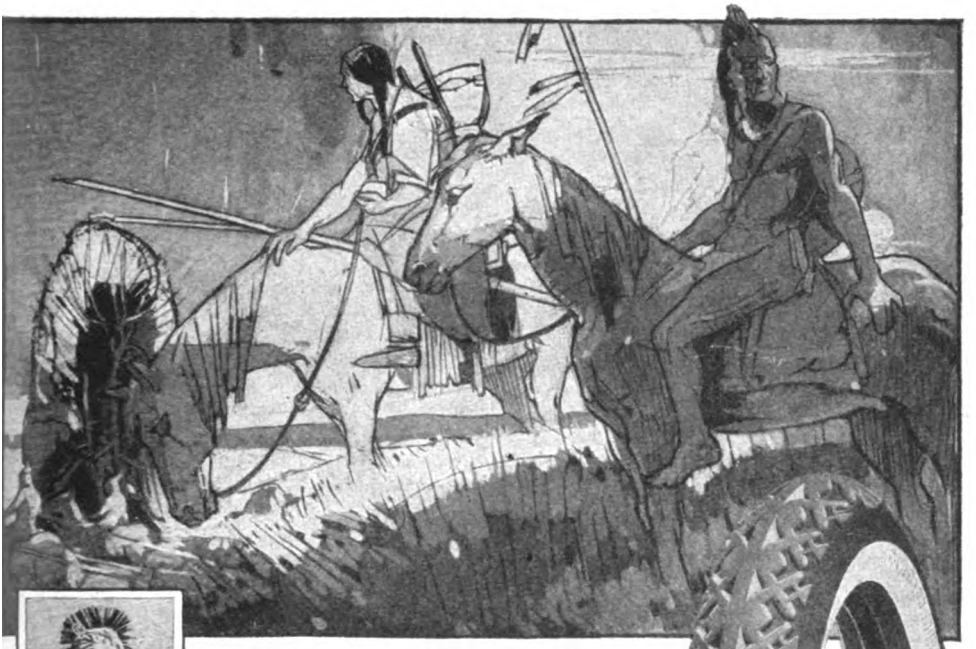


Choosing the Camp

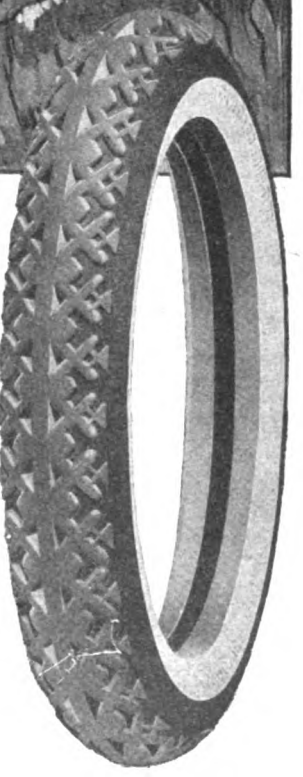
IN choosing the location to pitch their encampment the Indians selected a place where existence could be easily maintained.

In choosing the *Standard Four* line, distributors and dealers are influenced by the fact that it offers the least resistance to maintaining a successful business.

The tire is carefully made of best materials. Shipments are prompt. Adequate advertising and merchandising assistance is given.

Profits are exceptionally liberal. Territory is exclusive.

Write or wire today for full particulars.



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Standard Four Tires

"Chief of the Tire Tribe"

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TIRES, Pneumatic—Continued

Tuscan Tire & Rubber Co., Carrollton, O. "Buckskin."

Twin Tube & Rubber Co., 1002 S. Michigan Ave., Chicago, Ill. "Tred-Wel."

Tyer Rubber Co., Andover, Mass. "Tyrian."

Tyrian—See Tyer Rubber Co.

U. S. Compression Inner Tube Co., Tulsa, Okla. "Tulsa."

U. & G.—See United & Globe Rubber Co.

United—See Mansfield Tire & Rubber Co.

United Motors Service, Grand Blvd. at Cass, Detroit, Mich. "Formost."

United Rubber Co., Akron, O. "Huskie."

United States Tire Co., 1790 Broadway, New York, N. Y.

United & Globe Rubber Co., Prospect & Frasier Sts., Trenton, N. J. "U. & G."

Universal Rubber Products Co., Zelienople, Pa.

V. K.—See Sturges Tire & Rubber Co.

Veghte, Harry V., 799 Seventh Ave., New York, N. Y. (Dealers.) (See page 1101.)

Victor Rubber Co., Springfield, O. (See page 971.)

Victory—See Dry Climate Tire Mfg. Co.

Victory Tire & Rubber Co., Asbury Park, N. J.

Viking—See Combination Rubber Mfg. Co.

Virginia Rubber Co., Union Trust Bldg., Charleston, W. Va.

Vitalic—See Continental Rubber Works.

Vulcan Rubber Co., Erie, Pa.

Vulcweld Tire & Rubber Co., Pottstown, Pa.

W. K. M.—See Double Fabric Tire Co.

Warner Tire & Rubber Co., Warner Rd., Cleveland, O.

Warwick—See Washington Rubber Co.

Washington Rubber Co., Washington, Pa. "Warwick."

Wayne—See Fort Wayne Tire & Rubber Mfg. Co.

Wayne—See Montford Rubber Co.

Western Reserve Tire Corp—See Ohio Guaranty Tire Corp.

Williams Tire Co., Akron, O. "Monarch."

Wilson Tire & Rubber Co.—See Rubber Co. of America.

Wiregrip—See Lancaster Tire & Rubber Co.

World Puncture Proof Tire Co., Ridge Bldg., Kansas City, Mo.

Wyoming Tire & Rubber Co., 814-16 Coal Exchange Bldg., Wilkes-Barre, Pa. (See page 1181.)

X-L—See Excel Rubber Co.

Yale Tire & Rubber Co., 1003 Dixwell Ave., New Haven, Conn.

Zee-Zee Rubber Co., Yardville, N. J. "Haywood," "Climax."

Zenith Tire & Rubber Co., Leader-News Bldg., Cleveland, O. "Midco."

TIRES, Rebuilt

American Retreading Corp., 135-39 Everett Ave., Chelsea, Mass. (See page 1195.)

Sinclair Rubber Co., 1079 Broadway, New York, N. Y. (See page 977.)

TIRES, Solid

American Rubber & Tire Co., 100 Beach St., Akron, O.

Batavia Rubber Co., Batavia, N. Y.

Bergougnan Rubber Corp., 2000 E. State St., Trenton, N. J.

Brunswick-Balke-Collender Co., 623-33 S. Wabash Ave., Chicago, Ill. (See page 1171.)

Bucyrus—See Henderson Tire & Rubber Co.

Dunlop Tire & Rubber Corp. of America, Buffalo, N. Y. (See page 1137.)

Firestone Tire & Rubber Co., Miller & Sweitzer Aves., Akron, O.

Gibney Tire & Rubber Co., Conshohocken, Pa.

Goodyear Tire & Rubber Co., Akron, O. (See page 1015.)

Henderson Tire & Rubber Co., 23-31 W. 43d St., New York, N. Y. "Bucyrus." (See page 973.)

Hewitt Rubber Co., 240 Kensington Ave., Buffalo, N. Y.

Hood Rubber Products Co., Watertown, Mass. (See pages 969 and 970.)

Johnstone Tire & Rubber Co., La Porte, Ind.

Kelly-Springfield Tire Co., 1710 Broadway, New York, N. Y.

Latex Tire & Rubber Co., E. Scott St., Fond du Lac, Wis.

McGraw Tire & Rubber Co., Euclid Bldg., Cleveland, O.

Mason Tire & Rubber Co., 802 Lake St., Kent, O.

Milford Rubber Works, Milford, Ill.

Mono-Twin—See United States Tire Co.

Mutual Tire & Rubber So., 9 E. 40th St., New York, N. Y.

Owen Tire & Rubber Co., 2336 Euclid Ave., Cleveland, O.

Polack Tyre & Rubber Co., 145 Howard Ave., Bridgeport, Conn.

Republic Rubber Co., Albert St., Youngstown, Ohio.

Rimco—See Rubber Insulated Metals Corp.

Rubber Insulated Metals Corp., 901 North Ave., Plainfield, N. J. "Rimco."

Swinehart Tire & Rubber Co., North & Howard Sts., Akron, O.

United States Tire Co., 1790 Broadway, New York, N. Y. "Mono-Twin."

Victor Rubber Co., Springfield, O. (See page 971.)

TIRES, Special

(Cushion, Sectional, Wood, Spring, etc.)

American Wood Tire Co., 333 Dearborn St., Chicago, Ill.

Automobile Spring Wheel Co., 412 W. Broadway, New York, N. Y. "Sipe."

Brophy—See Pneumatic Cushion Inner Tube Co.

Burgess Patent Tire & Mfg. Co., 19th & Campbell Sts., Kansas City, Mo.

Compression Inner Tube Co., Rome, Ga.

Dayton Rubber Mfg. Co., W. River St., Dayton, O.

Edwards Rubber Co., Peoples Saving Bank Bldg., Akron, O.

Goodyear Tire & Rubber Co., Akron, O. "Mots." (See page 1015.)

Lambert Tire & Rubber Co., Akron, O. "Trublpruf."

Lee Tire & Rubber Co., 245 W. 55th St., New York, N. Y.

Mollitor Tire Co., 4241 Irving Park, Blvd., Chicago, Ill.

Mots—See Goodyear Tire & Rubber Co.

National Wheel Co., Wausau, Wis. (See page 1067.)

Pneumatic-Cushion Inner Tube Co., 1 Appleton St., Boston, Mass. "Brophy."

Rubber Insulated Metals Corp., Plainfield, N. J.

Sipe—See Automobile Spring Wheel Co.

Superior Tire & Rubber Co., 4511 N. Broad St., Philadelphia, Pa.

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(Not the same as rebuilt tires)

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Molded from the best compound of new rubber.

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Remolded on standard carcasses only—no inferior construction.

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TIRES, Special (Continued)

Tension Tire Co., York, Pa.

Trublpruf—See Lambert Tire & Rubber Co.

Veltung Steel Tire Co., 5 Columbus Circle, New York, N. Y.

TIRES, SPRING—See Tires, Special; also Wheels, Special

TOE CLIPS, MOTORCYCLE—See Clips, Motorcycle Toe

TOILET CASES—See Cases, Toilet

TONGS, TERMINAL—See Tools, Storage Battery Repair

TONNEAU SHIELDS—See Shields, Tonneau

TOOL BAGS—See Bags, Tool

TOOL BOX LOCKS—See Locks, Cabinet and Pad; also Catches, Spring

TOOL BOXES—See Boxes, Tool

TOOL CHECKS—See Checks, Brass Time, Tool and Pay

TOOL DESIGNERS—See Designers, Special Machinery and Tool

TOOL EXTENSION HANDLES—See Handles, Extension Tool

TOOL GRINDERS—See Grinders

TOOL HOLDERS—See Holders, Lathe and Planer Tool

TOOL KITS—See Kits, Tool

TOOL POST GRINDERS—See Drills, Electric Portable

TOOL RACKS—See Racks, Metal Tool

TOOL ROLLS—See Bags, Tool

TOOL STEEL—See Steel

TOOLS, AIR RELEASING—See Tools, Tire Deflating

TOOLS, BATTERY REPAIR—See Tools, Storage Battery Repair

TOOLS, BATTERY TERMINAL CLEANING—See Tools, Storage Battery Terminal Cleaning

TOOLS, BEARING PARTING FOR FORDS—See Tools, Cam-Shaft Bearing Parting

TOOLS, BEARING PULLING—See Pullers, Bearing

TOOLS, Cam-Shaft Bearing Parting, for Fords

American—See Fairbanks Co.

Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill. "American.") (See pages 137 to 140.)

Service Station Equipment Co.—See Fairbanks Co.

TOOLS, CHAIN ATTACHING—See Tools, Tire Chain Attaching

TOOLS, Chain Repair

(Tools or Clamps for drawing together the ends of broken driving chains to facilitate making repairs; for Tire Chain Repair Tools see Tools, Tire Chain, Repair)

Bean—See Liberty Metal Products Co.

Brown & Son, J. C., Butler, Ind.

Caldwell Tool Mfg. Co., 87 Warren St., New York, N. Y.

Central Flatiron Mfg. Co., Grand Ave., Johnson City, N. Y. "Duo-Point."

Duo-Point—See Central Flatiron Mfg. Co.

Handee—See Racine Handy Mfg. Co.

Harris & Reed Mfg. Co., 1510-22 W. 15th St., Chicago, Ill.

Liberty Metal Products Co., Front St. & First Ave., Berea, O. "Bean."

Meyer, Henry T. C., 208 Helen Ave., Detroit, Mich.

Necessity—See Macdonald & Co.

Macdonald & Co., J. N., 194 Main St., Wethersfield, Conn. "Necessity."

Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."

TOOLS, CHAIN REPAIR, MOTORCYCLE—See Tools, Motorcycle Chain Repair

TOOLS, COTTER PIN—See Pullers, Cotter Pin

TOOLS, Crank Pin Trueing

(For Crankshaft Grinding Machines—See Grinders, Crank Pin.)

Atherton-Salter Mfg. Co., St. Louis, Mo. "Shaftru."

Atlas Mfg. Co., Millvale Station, Pittsburgh, Pa. (See page 995.)

Emco Mfg. Co., 4 Griswold St., Binghamton, N. Y. "Taber." (See page 497.)

Hallee—See Lee Tool & Mfg. Co.

Kraeuter & Co., Newark, N. J.

Lee Tool & Mfg. Co., H. A., 220 W. 20th St., Kansas City, Mo. "Hallee."

Peters, Inc., Widener Bldg., Philadelphia, Pa. (See page 753.)

Railway Specialty Co., Atchison, Kans. "Rysco."

Rysco—See Railway Specialty Co.

Sawyer-Weber Tool Mfg. Co., 346 S. Alameda St., Los Angeles, Cal. "Weber." (See page 979.)

Shaftru—See Atherton-Salter Mfg. Co.

Taber—See Emco Mfg. Co.

Weber—See Sawyer-Weber Tool Mfg. Co.

TOOLS, CRANKSHAFT GRINDING—See Tools, Crank Pin Trueing

TOOLS, CYLINDER REBORING — See Tools, Portable Cylinder Reboring

TOOLS, Demountable Rim Contracting

(Tools or Clamps for contracting or expanding split demountable rims to facilitate the changing of tires)

Abbe, E. W., 19 Curtis St., New Britain, Conn.

Accurate Machine Mfg. Co., 234 Fifth Ave., S., Minneapolis, Minn.

B. & B.—See Bjornlie Mfg. Co.

Bjornlie Mfg. Co., 129 N. Broadway, Watertown, S. Dak. "B. & B."

Burd High Compression Ring Co., Rockford, Ill.

C. S.—See Canton Specialty Co.

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6000 MILES

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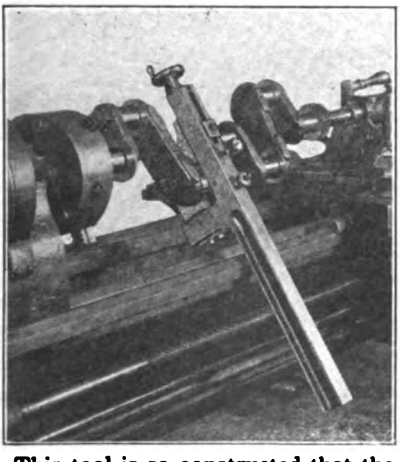

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We guarantee that it will re-turn a Crank-Pin within as close limits of accuracy as any other known method. There is no faster method known.

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TOOLS, Demountable Rim Contracting (Continued)

Canton Specialty Co., Canton, Ill. "C. S."
Case—See Handy Mfg. Co.
Davenport Mfg. Co., Davenport, Iowa.
Duplex Rim Device Co., 786 S. Chicago Ave., Chicago, Ill. "Safstroms."
Essandee Corp., 330 W. 16th St., Los Angeles, Cal. (See page 645.)
Eureka Rim Compressor Co., Addison, N. Y.
Excelsior—See Gulles Rim Tool Co.
Federal Corp., Westfield, Mass.
Fish-Best Co., 37 S. Wabash Ave., Chicago, Ill.
Friestedt Mfg. Co., 2934-38 W. Lake St., Chicago, Ill.
Giant—See Xcel Specialty Co.
Greb Co., 195 State St., Boston, Mass. (See page 743.)
Gulles Rim Tool Co., 18 Pearl St., Buffalo, N. Y. "Excelsior."
Handy Mfg. Co., Atlas Bank Bldg., Cincinnati, O. "Case."
Heitmiller & Sons, C. C., Seattle, Wash.
Hercules Rim Tool Co., 115 Commercial St., Los Angeles, Cal. (See page 995.)
Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributor for Greb Tools.) (See page 1187.)
Hughes Motor Co., John P., Lynchburg, Va.
Hurst Mfg. Co., H. L., Greenwich, O. "Quik-Ezy."
J. B. Demountable Split Rim Tool Co., 688 Seneca Ave., Detroit, Mich.
Jackson—See National Safety Car & Equipment Co.
Jamcap Rim Tool Co., 77 Bedford St., Boston, Mass.
K. P. Products Co., 250 W. 54th St., New York, N. Y.
Kap Mfg. Co., 281 Natoma St., San Francisco, Cal.
Lawco—See Lawson Co.
Lawson Co., F. H., Dept. D, Cincinnati, O. "Lawco." (See page 327.)
Lewsen Mfg. Co., Dept. A., Portland, Me. (See page 987.)
Little Giant—See Marquette Mfg. Co.
Marquette Mfg. Co., St. Paul, Minn. "Little Giant." (See page 511.)
Metal Products Mfg. Co., 121-29 Fifth Ave., S., Minneapolis, Minn. "Thiem." (See page 1015.)
Motor Specialties Co., Waltham, Mass.
National Safety Car & Equipment Co., Pierce Bldg., St. Louis, Mo. "Jackson."
Quick & Easy—See Wheel & Rim Works Corp.
Quick-Ezy—See Hurst Mfg. Co.
Record Accessories Corp., 23-31 W. 43rd St., New York, N. Y. (See page 1121.)
Safstroms—See Duplex Rim Device Co.
Schultze Machine Shop, Green & Lincoln Sts., Chenoa, Ill.
Schurman Auto Rim Removing Co., 5129 Penn Ave., Pittsburg, Pa.
Simplex Steel Stamping Co., 1926-28 Gravois Ave., St. Louis, Mo.
Sprague Tire & Rubber Co., 18th & Ozard Sts., Omaha, Neb.
Standley Skid Chain Co., Boone, Ia. (See page 679.)
Stanweld—See Standard Parts Co.
Thiem—See Metal Products Mfg. Co.
Trex—See Trexler Co.
Trexler Co., 1418 Walnut St., Philadelphia, Pa. (Sole Distributor for Twinlock Co., Phila., Pa.) "Trex." (See page 925.)
Weiser's H. Z. Rim Tool Co., 483-85 High St., Hamilton, O.
Wheel & Rim Works Corp., 110 S. Dearborn St., Chicago, Ill. "Quick & Easy."
Xcel Specialty Co., 38 Lewis Blk., Buffalo, N. Y. "Excelsior," "Giant."

TOOLS, Fender Straightening

Stiles Mfg. Co., St. Louis, Mo. (See page 521.)

TOOLS, Lathe and Planer

(See also Holders, Lathe and Planer Tool)

Billings & Spencer Co., Laurel & Park Sts. Hartford, Conn.
Carr—See Thompson & Son Co.
Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.
Haynes Stellite Co., Citizens Bank Bldg., Kokomo, Ind. "Stellite."
Johnson—See Pratt & Whitney Co.
Marcy Tool Works, Putnam, Conn.
O. K. Tool Holder Co., Shelton, Conn.
Pratt & Whitney Co., 111 Broadway, New York, N. Y. "Johnson," "Rhodes," "Woodbridge." (See page 339.)
Rhodes—See Pratt & Whitney Co.
Smith Tool & Mfg. Co., R. G., 315 Market St., Newark, N. J.
Stellite—See Haynes Stellite Co.
Stortz & Son, John, 210-12 Vine St., Philadelphia, Pa.
Thompson & Son Co., Henry G., 277 Chapel St., New Haven, Conn. "Carr."
Union Tool Co., 48 E. River St., Orange, Mass.
Woodbridge—See Pratt & Whitney Co.

TOOLS, MAIN BEARING REAMING FOR FORDS—See Reamers, Main Bearing and Connecting Rod

TOOLS, Motorcycle Chain Repair

Bean—See Liberty Metal Products Co.
Ero Mfg. Co., 700 W. 22nd Street, Chicago, Ill.
Liberty Metal Products Co., Front St. & First Ave., Berea, O. "Bean."

TOOLS, Piston Ring Compressing

(To facilitate the entering of piston and ring into cylinder)

Cady, C. N., Canastota, N. Y.
Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 545.)
Fore Electrical Mfg. Co., 5255 N. Market St., St. Louis, Mo.
Johnson Specialty Co., 616 E. Washington Ave., Madison, Wis. "Victory."
Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representative for Victory Ring Compressor Co., Grand Rapids, Mich.) (See page 688.)
Victory Ring Compressor Co.—See Jonas, C. N. & F. W.
Victory—See Johnson Specialty Co.

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FOR
TRACTORS, TRUCKS AND AUTOMOBILES
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Replaces the old style roller. It slides instead of rolling, eliminating the extraordinary wear on the rotor pin.

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McCulloch Timer Grinder

Will grind the wornout timers back to usefulness. Driven by hand or power. A necessity in any private or public garage.

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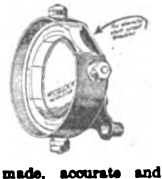

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Specialists in Ford Ignition
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TOOLS, Piston Ring Compressing, for Fords.

(To facilitate the entering of piston and ring into cylinder)

Duplex Rim Device Co., 6786 S. Chicago Ave., Chicago, Ill.

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Victory Ring Compressor Co., Grand Rapids, Mich.) (See page 688.)

Monckmeier, G. C., Tipton, Ia. "Universal."

Morgan Mfg. Co., Court St., Keene, N. H. (See page 751.)

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)

Universal—See Monckmeier, G. C.

Victory Ring Compressor Co.—See Jonas, C. N. & F. W.

TOOLS, Piston Ring Groove Cleaning

Lawson, G. D., Pocahontas, Iowa.

TOOLS, Piston Ring Removing

(Special pliers or tongs for removing rings from pistons)

Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. (See page 81.)

B & B Motor Specialties Co., 607 N. 13th St., Philadelphia, Pa.

Cloud Accessories Corp., 1408 S. Wabash Ave., Chicago, Ill.

Ensworth, Neil C., Warren, Pa.

Hartenstein, R. P., 542 S. Dearborn St., Chicago, Ill. "Utility."

Johnson Specialty Co., 616 E. Washington Ave., Madison, Wis.

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representative for W. S. Rush, Los Angeles, Cal.)

Monarch Auto Specialties Co., 1311-13 Clybourn Ave., Chicago, Ill.

Morgan Mfg. Co., Court St., Keene, N. H. (See page 751.)

Munger—See Splitdorf Electrical Co.

Nu Pep Mfg. Co., 1224 Farwell Ave., Chicago, Ill.

Rush, W. S.—See Jonas, C. N. & F. W.

Splitdorf Electrical Co., 98 Warren St., Newark, N. J. "Munger."

Utility—See Hartenstein, R. P.

Wilhelm-Smith Machine Co., 926 Bingaman St., Reading, Pa.

TOOLS, PLANER—See Tools, Lathe and Planer

TOOLS, Pneumatic

Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y. (See page 375.)

Cleveland Pneumatic Tool Co., 3844 E. 78th St., Cleveland, O.

Cochran Pipe Wrench Mfg. Co., 78th & Kimbark Sts., Chicago, Ill.

Dayton Pneumatic Tool Co., 314 E. Fifth St., Dayton, O. "Green."

Green—See Dayton Pneumatic Tool Co.

Helwig Mfg. Co., Seventh & Locust Sts., St. Paul, Minn.

Hergi Mfg. Co., Bridgeport, Conn.

Independent Pneumatic Tool Co., 1307 Michigan Ave., Chicago, Ill. "Thor." (See page 369.)

Ingersoll-Rand Co., 11 Broadway, New York, N. Y. "Little David."

Jackson—See Kalamazoo Railway Supply Co.

Kalamazoo Railway Supply Co., Kalamazoo, Mich. "Jackson."

Keller Pneumatic Tool Co., Grand Haven, Mich. (See page 441.)

Little David—See Ingersoll-Rand Co.

Oldham & Son Co., George, 4316-22 Lackawanna St., Philadelphia, Pa.

Thor—See Independent Pneumatic Tool Co.

Titan Automatic Tool Co., 25 W. Broadway, New York, N. Y.

Turbine Air Tool Co., 710 Huron Rd., Cleveland, O.

TOOLS, Portable Cylinder Reboring

(See also Machines, Cylinder Reboring; also Bore Boring)

Detroit Garage Equipment Co., 406 E. Jefferson Ave., Detroit, Mich.

Dunn Co., J. E., 1 Bethune St., New York, N. Y.

Hubaco—See Hughson-Bacon Co.

Hughson-Bacon Co., Oakland, Cal. "Hubaco." (See page 383.)

Storm Mfg. Co., Dept. L, Minneapolis, Minn. (See page 983.)

Universal Tool Co., 435 Woodward Ave., Detroit, Mich. "Utco." (See pages 984 and 985.)

Utco—See Universal Tool Co.

TOOLS, Portable Cylinder Reboring, for Fords

Champion Mfg. Co., 2908-10 W. Fletcher St., Philadelphia, Pa. (See page 995.)

Davis—See Hinckley Machine Works.

Detroit Garage Equipment Co., 406 E. Jefferson Ave., Detroit, Mich.

Fairbanks Co., New York, N. Y. (Sole Distributors for Hempy-Cooper Mfg. Co., Kansas City, Mo. (See pages 137 to 140.)

Goruse Co., Elmira, N. Y.

Heiser's Special Tool Co., 2001 Washington St., Kansas City, Mo.

Hempy-Cooper Mfg. Co.—See Fairbanks Co.

Hinckley Machine Works, E. Lincoln Ave., Hinckley, Ill. "Davis."

Hinckley-Myers Co., Jackson, Mich.

Hubaco—See Hughson-Bacon Co.

Hughson-Bacon Co., Oakland, Cal. "Hubaco." (See page 383.)

Storm Mfg. Co., Dept. L, Minneapolis, Minn. (See page 983.)

Universal Tool Co., 435 Woodward Ave., Detroit, Mich. "Utco." (See pages 984 and 985.)

Utco—See Universal Tool Co.

TOOLS, RESEATING—See Tools, Valve Reseating

TOOLS, RIM CONTRACTING—See Tools, Demountable Rim Contracting

TOOLS, RING REMOVING—See Tools, Piston Ring

TOOLS, SCRAPING—See Scrapers

TOOLS, Spring Leaf Separating

(For separating the spring leaves so they may be lubricated; for Spring Leaf Cups—See Cups and Covers, Spring Leaf Lubricating; for Spring Leaf Lubricating Strips—See Strips, Spring Leaf Lubricating)

Buckeye—See Central Brass & Fixture Co.

Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."

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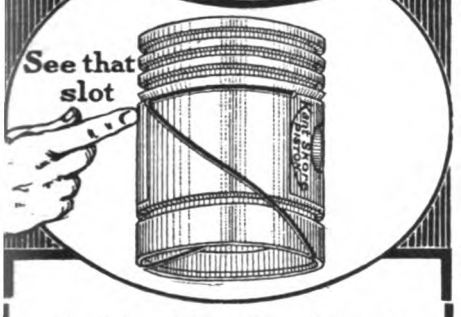
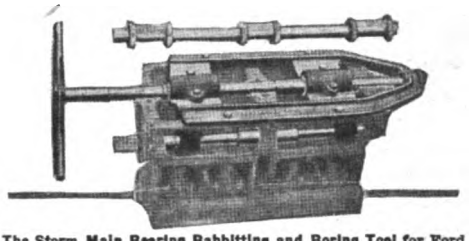
Kant-Skore PISTON



A lightweight, alloy piston that needs only one-thousandth inch clearance, yet can't seize or score. The slots take up all expansion. Always fit snug. Can't pump oil or slap. Strongly guaranteed.

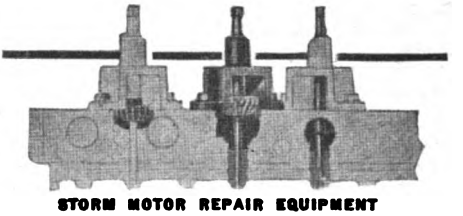
Made for most cars in their standard sizes and .003, .005, .010, .015, .020, and .030 oversizes.

Kant-Skore Piston Co.
520 Mutual Life Bldg., Buffalo, N. Y.



The Storm Main Bearing Babbitting and Boring Tool for Ford and Fordson Motors—puts in new, perfect bearings exactly the same as the original and in the proper position.

STORM
MOTOR REPAIR EQUIPMENT

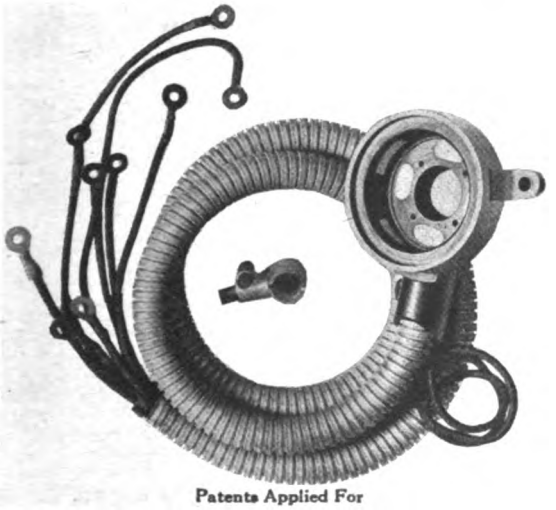


STORM MOTOR REPAIR EQUIPMENT

The Storm Valve Port Renewing Tool puts in a complete valve system—removes the old, wide, irregular face—enlarges the port and produces a new, narrow seat and accurate steam guide. Write for catalog.

STORM MANUFACTURING COMPANY
Department L Minneapolis, Minn.

COOK'S SURE FIRE COMMUTATOR
for Ford Cars



Patents Applied For

List Price $10.00

10 Special Features 10

The Timer with 10 Special Features. Here are the reasons why you should sell one of these timers to every Ford Car owner in your town.

No Nuts, Bolts or Screws to become loose.

Double-contact, Double-brush, and Double-wiring System, with all Wires permanently inclosed in Redmanol, affording absolute protection against Oil, Water, Grease, etc.

Develops good Hot Spark, so that every atom of Gas explodes, assuring Maximum Power and Fuel Economy with Minimum Wear and Tear of the Motor Mechanism. Reduces Carbon and eliminates Fouling, Knocking, Mis-firing and all other Ailments of the Motor caused by Timers.

Starts as easy in cold weather as otherwise.

Requires no Lubrication.

Materials and Workmanship of the Highest Quality.

Can be installed in less than ten minutes.

Will last as long as the car lasts.

Once installed never regretted.

All orders given prompt attention. Write us today for our discounts to the trade.

THE TIMER WITHOUT AN EQUAL

SOUTHERN EQUIPMENT COMPANY
26 Court Street . Brooklyn, N. Y.

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UNIVERSAL

REG. U.S. PAT. OFF.

Cylinder Reboring Tools and Brake Band Mandrels for All Automobiles

JOBBERS CARRYING ALL UNIVERSAL TOOLS

ALABAMA

Moore Handley Hdw. Co.....Birmingham
Johnson Tire & Supply Co.....Montgomery

ARIZONA

Motor Supply Co.....Phoenix

ARKANSAS

Arkansas Auto Appliance Co.....Little Rock
Crow-Burlingame Co.....Little Rock
Voss Hutton Mfg. Co.....Little Rock

CALIFORNIA

Chanslor & Lyon Co.....Fresno
Chanslor & Lyon Co.....Los Angeles
Eccles & Smith Co.....Los Angeles
E. A. Featherstone.....Los Angeles
Motor Hardware & Equipment Co.....San Diego
Chanslor & Lyon Co.....San Francisco
Harron, Rickard & McCone.....San Francisco
Waterhouse & Lester Co.....San Francisco

COLORADO

General Auto Supply Co.....Colorado Springs
Auto Equipment Co.....Denver
B. K. Sweeney Electrical Co.....Denver

DISTRICT OF COLUMBIA

Chas. Rubel & Co.....Washington

FLORIDA

Consolidated Grocery Co.....Jacksonville
Norman G. Baughman Co.....Tampa
Wholesale Auto Supply House.....Tampa

GEORGIA

Alexander Seewald Co.....Atlanta
Ozburn-Abston & Co.....Atlanta
Seegar Machine Tool Co.....Atlanta
The Walraven Co.....Atlanta
Automotive Supply Co.....Augusta
W. E. Cody Co., Inc.....Columbus
Corbin Supply Co.....Macon

IDAHO

North Western Auto Supply Co.....Pocatello

ILLINOIS

E. D. Kimball Co.....Chicago
Barrett Hdwe. Co.....Joliet
Cummings & Emerson.....Peoria
National E. & A. Supply Co.....Peoria
Washington Auto Supply Co.....Washington

INDIANA

Orr Iron Co.....Evansville
Fort Wayne Iron Store Co.....Fort Wayne
I. J. Cooper Rubber Co.....Indianapolis
The Gibson Company.....Indianapolis
Tire Sales Co.....New Albany
Terre Haute Automobile Co.....Terre Haute

IOWA

Cedar Rapids Pump Co.....Cedar Rapids
Sieg Iron Co.....Davenport
Herring Motor Co.....Des Moines
Midwest Auto Supply Co.....Dubuque

KANSAS

Lee Hardware Co.....Salina
W. A. L. Thompson Hdwe. Co.....Topeka
Motor Equipment Co.....Wichita
Johnson Bros. Auto Supply Co.....Wichita

KENTUCKY

L. Gay Strode Co.....Lexington
Harbison & Gathright Co.....Louisville
Louisville Auto Supply Co.....Louisville
Peasles Gaulbert Co.....Louisville
Robinson Brothers & Co., Inc.....Louisville

LOUISIANA

Rapides Auto Co.....Alexandria
Oliver H. Van Horn Co.....New Orleans

MARYLAND

Baltimore Gas Light Co.....Baltimore
R. W. Norris & Sons.....Baltimore

MASSACHUSETTS

Linscott Supply Co.....Boston

MICHIGAN

General Sales Co.....Detroit
Michigan Automotive Supl. Co.....Detroit
Morley Brothers.....Saginaw
Roehm & Davison.....Detroit
Watkins & Radcliffe Co.....Detroit

MINNESOTA

Reinhard Brothers Co., Inc.....Minneapolis
Hackett, Gates & Hurty Co.....St. Paul
P. R. L. Hardenbergh & Co.....St. Paul

MISSOURI

Faeth Iron Co.....Kansas City
Motor & Machinist Supply Co.....Kansas City
Motor Car Supply Co.....Macon
Ayers-Farmer Auto Supply Co.....St. Joseph
Beck & Corbitt Iron Co.....St. Louis
Sligo Iron Store Co.....St. Louis
The Straus Co.....St. Louis

MONTANA

Northwestern Auto Supply Co.....Billings

NEBRASKA

Kopec Brothers.....Omaha
Sunderland Machinery Co.....Omaha

NEW JERSEY

Economy Auto Supply Co.....Newark
Thompson Reilly Co.....Newark

NEW YORK

Albany Hdwe. & Iron Co.....Albany
Martin-Evans Co.....Brooklyn
H. D. Taylor Co.....Buffalo
A. J. Picard & Co.....New York City
W. H. Rowerdink & Son.....Rochester
United States Rubber Co.....Syracuse

NORTH CAROLINA

Interstate Motor Equipment Co.....Raleigh
Brown-Rogers Co.....Winston-Salem

NORTH DAKOTA

J. D. Grant & Co.....Fargo

OHIO

Pennsylvania Rubber & Supply Co.....Akron
Dine De Wees Co.....Canton
The Julius J. Bantlin Co.....Cincinnati
I. J. Cooper Rubber Co.....Cincinnati
Pennsylvania Rubber & Supply Co.....Cincinnati
I. J. Cooper Rubber Co.....Cleveland
The M. & M. Co.....Cleveland
Pennsylvania Rubber & Supply Co.....Cleveland
I. J. Cooper Rubber Co.....Columbus
Griswold-Sohl Co.....Columbus

NOTE—Jobbers listed on these two pages carry stock of all UNIVERSAL TOOLS and EQUIPMENT

THE UNIVERSAL TOOL CO., Inc.

Makers of UTCO Products

435 Woodward Avenue **DETROIT, MICH.**

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UNIVERSAL

REG. U.S. PAT. OFF.

Main Bearing Babbitting and Boring Equipment for Fords and Fordsons

Justus & Parker Co.....Columbus
I. J. Cooper Rubber Co.....Dayton
Dayton Iron & Steel Co.....Dayton
York Supply Co.....Greenville
I. J. Cooper Rubber Co.....Toledo
Union Supply Co.....Toledo
Pennsylvania Rubber & Supply Co....Youngstown

OKLAHOMA

J. B. Burwell Supply Co.....Oklahoma City
Tulsa Motor Supply Co.....Tulsa

OREGON

Ballou & Wright Co.....Portland
Chanslor & Lyon Co.....Portland
Waterhouse & Lester Co.....Portland

RHODE ISLAND

Waite Auto Supply Co.....Providence

PENNSYLVANIA

The Johnstown Auto Sup. Co.....Johnstown
Gaul, Derr & Shearer Co.....Philadelphia
Jackson Motor Supply Co.....Pittsburgh
Lansing Hdwe. Co.....Scranton

SOUTH CAROLINA

Bailey-Lobby Co.....Charleston

TENNESSEE

James Supply Co.....Chattanooga
Southern Auto Supply Co.....Chattanooga
I. J. Cooper Rubber Co.....Knoxville
C. M. McClung & Co.....Knoxville
I. J. Cooper Rubber Co.....Memphis
Mills-Morris Co.....Memphis
Osburn-Abston Co.....Memphis
I. J. Cooper Rubber Co.....Nashville
Hirsig Auto Supply Co.....Nashville
Phillips-Chapman Co.....Nashville

TEXAS

General Auto Supply Co.....Amarillo
Ferris-Dunlap Auto Supply Co.....Dallas
Southern Equipment Co.....Dallas
Houston Auto Supply Co.....Houston
Peden Iron & Steel Co.....Houston
W. F. Dulaney & Sons.....Paris
Southern Equipment Co.....San Antonio
Archenhold Auto Supply Co.....Waco
McLendon Hdwe. Co.....Waco

UTAH

Capital Electric Co.....Salt Lake City
Inter-Mountain Electric Co.....Salt Lake City
Motor Mercantile Co.....Salt Lake City
The Salt Lake Hdwe. Co.....Salt Lake City

VIRGINIA

Owens-Merritt Co., Inc.....Danville
Piedmont Hdwe. Co.....Danville
McGraw Tool & Supply Co.....Norfolk
Norfolk Motor Equipment Corp.....Norfolk
W. M. Whaley Co.....Norfolk
Chas. Leonard Hdwe. Co., Inc.....Petersburg
J. T. Lindsay Co., Inc.....Richmond
Richmond Hdwe Co.....Richmond
Smith-Courtney Co.....Richmond
E. L. Taylor & Co., Inc.....Richmond
Meadows-Price Co.....Roanoke

WASHINGTON

Ballou & Wright Co.....Seattle
Chanslor & Lyon Co.....Seattle
Chanslor & Lyon Co.....Spokane
Holley-Mason Hardware Co.....Spokane

WEST VIRGINIA

Baldwin Supply Co.....Charleston
Williams Hdwe. Co.....Clarksburg
Emmons-Hawkins Co.....Huntington
Van Zandt Leftwich Auto Sup. Co....Huntington

WISCONSIN

L. F. Schoelkopf.....Madison
Shadbolt & Boyd Iron Co.....Milwaukee

FOREIGN REPRESENTATIVES

ARGENTINE

David S. Hayes & John L. Denton..Buenos Aires

AUSTRALIA

Cornell, Ltd.....Adelaide
Queensland Motor Agency.....Brisbane
Richardson, Orr & Co.....Brisbane
Alexander, Mair & Co.....Melbourne
Richardson, Orr & Co.....Melbourne
H. P. Gregory & Co.....Sydney
Richardson, Orr & Co.....Sydney

BRAZIL

David S. Hayes & John L. Denton..Rio de Janeiro

CHILE

David S. Hayes & John L. Denton.....
.....Buenos Aires, Argentine

ENGLAND

Gaston E. Marbaix.....London
(General Representative for Europe and Africa)
John Shaw & Sons, Ltd.....Wolverhampton

FRANCE

J. Horstmann.....Paris

HAWAIIAN ISLANDS

Schumann Carriage Co.....Honolulu
Schumann Carriage Co.....Oahu Island

INDIA, BERMUDA AND CEYLON

Alfred Herbert (India), Ltd.....Bombay
Alfred Herbert (India), Ltd.....Calcutta

NEW ZEALAND

Adams, Ltd.....Christchurch
Tourist Motor Co., Ltd.....Hastings
Motor Import.....Wellington
Richardson, Orr & Co.....Wellington

NORWAY

Aktiebolaget A. Benthron.....Christiania

PARAGUAY

David S. Hayes & John L. Denton.....
.....Buenos Aires, Argentine

PORTUGAL

Costa & Ribiera.....Lisbon

SWEDEN

Maskin A. S. K. Lund.....Stockholm

URUGUAY

David S. Hayes & John L. Denton.....Montevideo

NOTE—Jobbers listed on these two pages carry stocks of all UNIVERSAL TOOLS and EQUIPMENT

THE UNIVERSAL TOOL CO., Inc.

Makers of UTCO Products

435 Woodward Avenue DETROIT, MICH.

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TOOLS, Spring Leaf Separating (Continued)

Cincinnati Tool Co., Main Ave., Norwood, O.
Cochran—See Larco Wrench & Mfg. Corp.
Jimmy—See Thomas-Armstrong Co.
Knowlsons—See Spring Leaf Lubricator Co.
Larco Wrench & Mfg. Corp., 7800 Woodlawn Ave., Chicago, Ill. "Cochran."
Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.
O.K.—See West Haven Mfg. Co.
Onan, David W., 1323 Penn Ave., N., Minneapolis, Minn. (See page 1127.)
Sees-All Mfg. Co., 1810 W. Lake Ave., Seattle, Wash.
Spring Leaf Lubricator Co., 1119 Packard St., Ann Arbor, Mich. "Knowlsons."
Standard Engineering Works, 59 Social St., Woonsocket, R. I.
Struve Mfg. Co., H. H., 3442 Harlem Pl., Cincinnati, O.
Thomas-Armstrong Co., Geneva, N. Y. "Jimmy."
Tomahawk Mfg Co., 1826 Mannering Rd. S. E., Cleveland, O.
Volz, F. W., 3914 Grant Rd., Washington, D. C.
Weise, A. F., 133 W. Washington St., Chicago, Ill.
West Haven Mfg. Co., 22 Elm St. (West Haven), New Haven, Conn. "O.K."
Winther & Sons, C. W., Fresno, Cal.

TOOLS, SPRING LUBRICATING—See Tools, Spring Leaf Separating

TOOLS, Storage Battery Repair

Battery Equipment & Supply Co., 1458-60 S. Michigan Blvd., Chicago, Ill. (See page 387.)
Buffum Tool Co., Louisiana, Mo. (See page 529.)
Orum, S. R. M., 5143 Keyser St. (North Philadelphia), Philadelphia, Pa.
Service Station Supply Co., 124 E. Larned St., Detroit, Mich.
Storage Battery Supply Co., 1535 Cherry St., Philadelphia, Pa. (See page 1125.)
Stuckeman Bros., 330 Liberty Ave., Pittsburgh, Pa.
Thompson Mfg. Co., Liberty & North Sts., Meadville, Pa.

TOOLS, Storage Battery, Terminal Cleaning

Four-in-One—See Xander, J. G.
Xander, J. G., 324 Court St., Reading, Pa. "Four-in-One."

TOOLS, STUD BOLT—See Extractors, Stud Bolt

TOOLS, Threading

Armstrong Bros. Tool Co., 304 N. Francisco Ave., Chicago, Ill. (See page 1007.)
Federal Products Corp., 393 Harris Ave., Providence, R. I.
Geometric Tool Co., Blake & Valley Sts., New Haven, Conn.
Modern Tool Co., State & Second Sts., Erie, Pa.
Rickert-Shafer Co., 613 W. 11th St., Erie, Pa.
Rivett Lathe & Grinder Co., 20 Riverview Rd. (Brighton), Boston, Mass.
Smith Tool & Mfg. Co., R. G., 315 Market St., Newark, N. J.
Victor Tool Co., Waynesboro, Pa.

TOOLS, Tire

(For taking off and putting on tires; for Rim Tools see Tools, Demountable Rim Contracting)

Attwood Brass Works, Grand Rapids, Mich. (See page 1195.)
B. B.—See Bjornlie Mfg. Co.
Bjornlie Mfg. Co., 129 N. Broadway, Watertown, S. Dak. "Perfect," "B. B."
Block Tire Tool Co., 505 Eighth St., Cincinnati, O.
Bowles & Little, 611 Mulberry St., Des Moines, Ia. "Case."
Bridgeport Hardware Mfg. Corp., 461 Iranistan Ave., Bridgeport, Conn. "Matchless-Thor."
Buckeye—See Central Brass & Fixture Co.
Carlson & Co., Charles G., 3735 Wall St., Chicago, Ill. "Star."
Case—See Motor Necessities Co. of America
Case—See Bowles & Little.
Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Springfield," "Buckeye."
Champ Spring Co., 2107 Chouteau Ave., St. Louis, Mo.
Cox Brass Mfg. Co., Albany, N. Y. (See page 261.)
Cunningham & Berrien, 25 W. 43rd St., New York, N. Y. (Sole Distributors for D. C. Woodworth, Lewiston, Me.) (See page 419.)
Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.
Gemco Mfg. Co., 636 S. Pierce St., Milwaukee, Wis. (See pages 174 and 175.)
Goodrich-Lenhart Mfg. Co., Hamburg, Pa. (See page 721.)
Greb Co., 195 State St., Boston, Mass. (See page 743.)
Jackson—See Standard Machine Mfg. Co.
Jiffy Tire Setter Co., 205 W. Center St., Warsaw, Ind.
L. & L.—See Larson & Lundberg.
L. & M.—See Long Machine Works.
Larson & Lundberg, 325 N. Main St., Kewanee, Ill. "L. & L."
Lewsen Mfg. Co., Dept. A, Portland, Me. "Two-In-One." (See page 987.)
Lightning—See Thorwald Mfg. & Sales Co.
Long Machine Works, Adam A., Ave. B & St. Paul St., Rochester, N. Y. "L. & M."
M. M. & E. Sales Co., Lenawee Co. Bank Bldg., Adrian, Mich.
Maremont Mfg. Co., 916-18 S. Wabash Ave., Chicago, Ill. (See page 297.)
Marquette Mfg. Co., St. Paul, Minn. (See page 511.)
Martin & Co., Edward, 25 S. Clinton St., Chicago, Ill. "Perfection."
Matchless-Thor—See Bridgeport Hardware Mfg. Co.
Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.
Morgan Mfg. Co., Court St., Keene, N. H. (See page 751.)
Motor Necessities Co. of America, 324 Third Ave., S., Minneapolis, Minn. "Case."
National Jack & Mfg. Co., 130-34 S. Clinton St., Chicago, Ill.
Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)
Nemours Trading Corp., 46th St. & Lexington Ave., New York, N. Y. "Woodworth."
Perfect—See Bjornlie Mfg. Co.

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"MIRETE"

The Guaranteed ALUMINUM Bonding Material

REPAIRS

CRANKCASES	BODIES	FENDERS
TRASMISSION	RADIATORS	DIE CASTINGS
MANIFOLDS	MOTOR CYCLE PARTS	TANKS

Mirete Company of New York, Inc., 304 West 39th St.

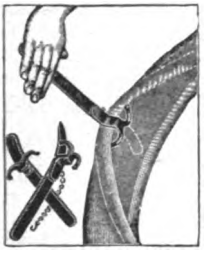
LEWSEN PATENT DEVICES

FOR THE

AUTO TRADE

make money for jobbers and dealers—save time and trouble for vulcanizers, garagemen and

Car Owners



No. 1-S Lewsen 2 in 1 Tire Spreader and Iron, $2.00. No. 2-D Set with Chain, $4.00.

No. 3-D Lewsen Tire Spreader for vulcanizers, set $7.50.

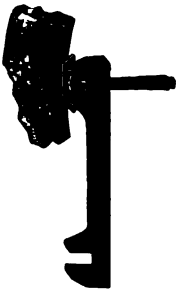
No car with pneumatic tires is properly equipped without one of the Lewsen 2 in 1 Tire Irons. It takes the rim out of the tire and opens the tire and locates the hidden nail between the fabric and the rubber, it locates any break in the fabric, opens the bead so one can easily insert the tube; in fact, it eliminates 99% of tire trouble. The hook part is a forging—bottom part highly polished spring steel non-breakable.

Lewsen Tire Spreader No. 3-D for vulcanizers turns the tires inside out and holds open in position for buffing, cleaning, repairing in the side of the tire.

Lewsen Quick Rim Spreader contracts and expands the rim on three points, without spoiling it—will work on spoiled rims as well. Guaranteed 6,000 lb. pressure.

Perfect Valve Wrench removes and tightens nuts, no matter how rusty or banged up stem may be.

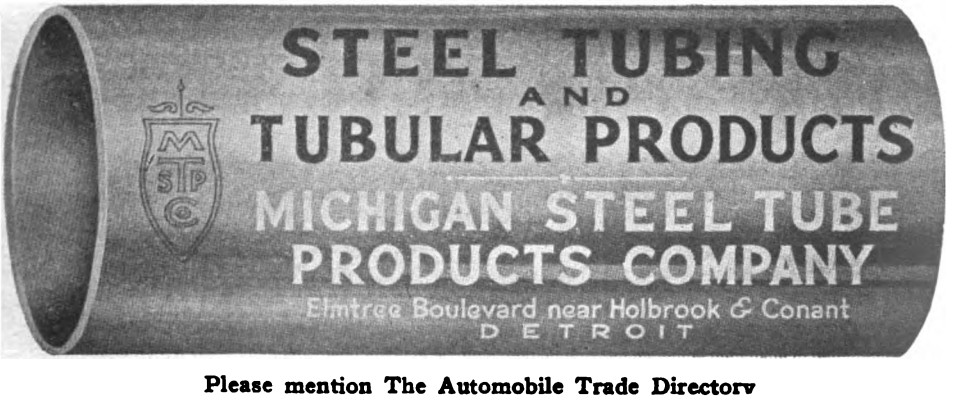
Lewsen Quick Rim Spreader, contracting and expanding, $7.50.



Lewsen Perfect Valve Wrench, $1.25.

Sold by leading jobbers and dealers, or address

Lewsen Manufacturing Company
Portland Department A Maine


STEEL TUBING
AND
TUBULAR PRODUCTS
MICHIGAN STEEL TUBE
PRODUCTS COMPANY
Elmtree Boulevard near Holbrook & Conant
DETROIT

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TOOLS, Tire (Continued)

Perfect—See Pratt Mfg. Co.
Perfect Handle—See Smith & Co.
Perfection—See Martin & Co.
Perfection Mfg. Co., New Martinsville, W. Va.
Pratt Mfg. Co., Wm. E., 35 W. Lake St., Chicago, Ill. "Perfect."
Rhodes Mfg. Co., S. Division St. & First Ave., Grand Rapids, Mich.
Shawver Co., rear 21 W. Pleasant St., Springfield, O. "Springfield."
Smith & Co., H. D., Plantsville, Conn. "Perfect Handle."
Springfield—See Central Brass & Fixture Co.
Springfield—See Shawver Co.
Standard Machine Mfg. Co., Pierce Bldg., St. Louis, Mo. "Jackson."
Star—See Carlson & Co.
Thorwald Mfg. & Sales Co., 1307 Jackson St., Omaha, Neb. "Lightning."
Tobey, Wm. L., 9 Lewis St. (E. Boston), Boston, Mass.
Two-In-One—See Lewsen Mfg. Co.
Walker Mfg. Co., Hamilton & Michigan Sts., Racine, Wis.
Wallace Engineering Co., 542 W. Jackson Blvd., Chicago, Ill.
Wieland, Chas., Yankton, S. D.
Woodworth—See Nemours Trading Corp.
Woodworth, D. C.—See Cunningham & Berrien.

TOOLS, Tire Chain Attaching

(Screw or toggle clamps to draw ends of tire chains together when putting on wheel so they may be easily hooked or fastened)

Alcemo Mfg. Co., 120 Bridge St., Newark, N. J. (See page 247.)
Atlasta Specialty Mfg. Co., 2941-43 Locust St., St. Louis, Mo.
Buckeye—See Central Brass & Fixture Co.
Buffum Tool Co., Louisiana, Mo. (See page 529.)
Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."
Foss-Hughes Co., 21st & Market Sts., Philadelphia, Pa. "Right Way."
Kraeuter & Co., Newark, N. J. (See page 711.)
Marvel Accessories Mfg. Co., 1220 W. Sixth St., Cleveland, O.
Right Way—See Foss-Hughes Co.

TOOLS, Tire Chain Repair

(For removing old and applying new cross sections on tire chains)

Apco Mfg. Co., Providence, R. I.
B. & A. Machine Co., 203 W. 75th St., New York, N. Y. "Spook." (See page 1099.)
Buffum Tool Co., Louisiana, Mo. "Climax." (See page 529.)
Central Flatiron Mfg. Co., Grand Ave., Johnson City, N. Y.
Climax—See Buffum Tool Co.
Kraeuter & Co., Newark, N. J. (See page 711.)
McKaig Drop Forge Co., 14 Perry St., Buffalo, N. Y.
Shelley Tool Co., Saranac Lake, N. Y.
Spook—See B. & A. Machine Co.

TOOLS, Tire Deflating

(For holding down valve plunger to allow air to escape without removing the plunger; for Deflating Machines—See Machines, Tube Deflating and Valve Removing)

Ideal—See Van's Auto Specialty Co.
Security Tool Works, 115-17 S. Clinton St., Chicago, Ill.
Sprick Bros. Investment Co., Stickney, S. Dak.
Van's Auto Specialty Co., Clyde, O. "Ideal."

TOOLS, Tire Spreading

(For Tire Spreading Machines—See Machines, Tire Inspecting)

Nation Co., 332 W. 10th St., Los Angeles, Cal. (See page 1141.)

TOOLS, Tire Tread Rolling and Peeling

Leader Skid Chain Co., 4104 Manchester Ave., St. Louis, Mo.
Sanport Co., Murphy Bldg., Indianapolis, Ind.
Western Rubber Mold Co., 243 N. Crawford Ave., Chicago, Ill. (See page 647.)

TOOLS, Tire Valve Rethreading

All-In-One—See National Jack & Mfg. Co.
G T D—See Greenfield Tap & Die Corp.
Greenfield Tap & Die Corp., Greenfield, Mass. "Hercules," "Utility," "G T D." (See page 927.)
Hercules—See Greenfield Tap & Die Corp.
National Jack & Mfg. Co., 130-34 S. Clinton St., Chicago, Ill. "All-In-One."
Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)
Omega—See Stevens & Co.
Roberge & Sons Mfg. Co.—See Knight Co.
Schrader's Son, A., Brooklyn, N. Y. (See page 768.)
Stevens & Co., 375 Broadway, New York, N. Y. "Omega." (See page 1147.)
Utility—See Greenfield Tap & Die Corp.

TOOLS, Tire Vulcanizing

Fairbanks Co., New York, N. Y. (Sole Distributors for T. & T. Tire Dresser Co., San Francisco, Cal.) (See pages 137 to 140.)
P. S. M. Co., Minneapolis, Minn.
T. & T. Tire Dresser Co., San Francisco, Cal.

TOOLS, Transmission Band Spring Compressing for Fords

Apco Mfg. Co., Providence, R. I.
Knight Co., Harry, S. W. Life Bldg., Dallas, Tex. (Sales Department for Roberge & Sons Mfg. Co., Dallas, Tex.)

TOOLS, TREAD ROLLING—See Tools, Tire Tread Rolling and Peeling

TOOLS, Valve Cage Removing

Culavin, Geo. H., Dunlap, Ia.
J & B Mfg. Co., Pittsfield, Mass. (See page 739.)
Newton Mfg. Co., Church St., Plainville, Conn.

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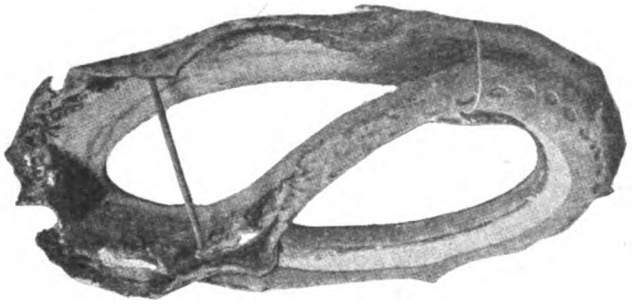
AERO-CUSHION INNER-TIRE :: AND RUBBER COMPANY ::



The above cut was made from the original photograph of an outer casing that had gone its limit on air pressure, and was discarded. The owner had it equipped with an Aero Cushion Inner Tire and got over five thousand miles more service.

Aero Cushion Inner Tires are opening up new fields of profits for jobbers and dealers throughout the country.

These tires have the following distinctive advantages which strongly appeal to all car owners.

COST—Aero Cushion Inner Tires cut tire expenses over 50%. In the first place their cost is practically the only one, for being made of pure Para Rubber, they will last indefinitely.

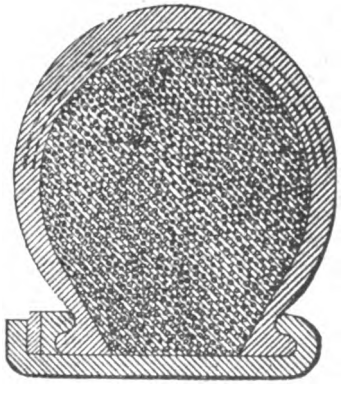
A casing used over an Aero Cushion Inner Tire will give from three to four times the mileage of this same casing on an air filled tube.

They will give this increased mileage because they can be worn completely through before they have to be discarded.

Besides this saving in tires and tubes, think of the expense and trouble that can be done away with by eliminating the necessity of carrying spare tires, tubes, patches and pumps in the car.

ELIMINATION OF TIRE TROUBLES—When Aero Cushion Inner Tires are used punctures and blowouts are impossible. This advantage alone will appeal to every car owner.

Write us today for our terms to the trade. Don't wait for your competitor to do it.



The above illustration is a drawing of a cross section of the Aero Cushion Inner Tire, showing it as it appears enclosed in the outer casing.

The illustration also plainly shows the millions of cells or pores, where the air is confined, making this inner tire very light and resilient.

AERO-CUSHION INNER-TIRE AND RUBBER COMPANY

GENESEE AVENUE **SAGINAW, MICHIGAN**

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TOOLS, Valve Grinding

(For Valve Grinding Machines—See Machines, Valve Seating)

Albertson & Co.—See Jonas, C. N. & F. W.

American Radio & Research Corp., Medford Hillside, Mass. "Whitcomb."

American Valve Tool Mfg. Co., 354 W. 50th St., New York, N. Y.

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern & Southern Distributors for "Sioux" Tools.) (See page 275.)

Ashcroft Mfg. Co., 119 W. 40th St., New York, N. Y.

Au-To Compressor Co., Wilmington, O., "Turko," "Oro."

Autoquip Mfg. Co., Rochester, N. Y. (See page 745.)

B & B Motor Specialties Co., 607 N. 13th St., Philadelphia, Pa.

Baldwin—See Universal Valve Grinder Co.

Bowen Products Corp., 933 17th Ave., S. E., Minneapolis, Minn. "Perfect."

Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.

Brown, W. C., 584 Sherman St., Niles, O. "Kandikid."

Brown Co., 1071-73 Clinton St., Syracuse, N. Y.

Burd High Compression Ring Co., Rockford, Ill.

E-Z—See Syracuse Wrench Co.

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 174 and 175.)

Goodell-Pratt Co., Greenfield, Mass.

Graham Roller Bearing Co., Coudersport, Pa. (See page 283.)

Hi-Speed—See Loomis-Beardsley Co.

Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributor for Graham Tools.) (See page 1187.)

Hudson Motor Specialties Co., 1932 Arch St., Philadelphia, Pa.

Jameson & Burbank, 19 Walnut St., Neponsett, Mass. "Little Wonder."

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Albertson & Co., Sioux City, Ia.) "Sioux."

Kaiser, L. J., 2274 Park Blvd., Detroit, Mich. "Uni-Ver-Sal."

Kandikid—See Brown, W. C.

Kellogg Mfg. Co., Rochester, N. Y. (See page 747.)

Lanshield Mfg. Co., 510 First Ave., West Haven, Conn.

Little Wonder—See Jameson & Burbank.

Loomis-Beardsley Co., Columbus, O. "Hi-Speed." (See page 993.)

M-B Tool Co., Danielson, Conn.

M & M Mfg. Co., 7447 S. Chicago Ave., Chicago, Ill. (See page 1205.)

Marvel Accessories Mfg. Co., 1220 W. Sixth St., Cleveland, O.

Millers Falls Co., Millers Falls, Mass.

Mosco—See Motor Specialties Co.

Mossberg Co., Frank, Attleboro, Mass.

Motor Specialties Co., Waltham, Mass. "Mosco."

Nance Mfg. Co., 1348 N. Clark St., Chicago, Ill.

Nasco—See National Auto Specialty Co.

National Auto Specialty Co., Tama, Ia. "Nasco."

New Favorite Mfg. Co., Columbus, O.

Newton Mfg. Co., Church St., Plainville, Conn.

Oro—See Au-To Compressor Co.

Perfect—See Bowen Products Corp.

Rothermich, A. P., 2915 N. Taylor Ave., St. Louis, Mo.

Simplicity—See Universal Equipment & Supply Co.

Sioux—See Jonas, C. N. & F. W.

Syracuse Wrench Co., 501 E. Water St., Syracuse, N. Y. "E-Z."

Turko—See Au-To Compressor Co.

Universal Equipment & Supply Co., Syracuse, N. Y. "Simplicity." (See page 727.)

Uni-Ver-Sal—See Kaiser, L. J.

Wall, J. H., 290 Hope St., Bristol, R. I.

Whitcomb—See American Radio & Research Corp.

White Mfg. Co., 511 Lincoln Way, South Bend, Ind.

TOOLS, Valve Grinding, for Fords

Albertson & Co.—See Jonas, C. N. & F. W.

American Radio & Research Corp., Medford Hillside, Mass. "Whitcomb."

Apco Mfg. Co., Providence, R. I.

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern & Southern Distributors for "Sioux" Tools.) (See page 275.)

Corbin, P. & T., Park & Orchard Sts., New Britain, Conn.

Efemco—See Foster, Merriam & Co.

Foster, Merriam & Co., Meriden, Conn. "Efemco." (See page 821.)

Faw, J. H., 27 Warren St., New York, N. Y. "Fawsco." (See page 241.)

Fawsco—See Faw, J. H.

Graham Roller Bearing Co., Coudersport, Pa. (See page 283.)

Hi-Speed—See Loomis-Beardsley Co.

Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributor for Graham Tools.) (See page 1187.)

Hudson Motor Specialties Co., 1934 Arch St., Philadelphia, Pa.

Humboldt—See Republic Auto Parts Co.

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Albertson & Co., Sioux City, Ia.) "Sioux."

Loomis-Beardsley Co., Columbus, O. "Hi-Speed." (See page 993.)

M-B Tool Co., Danielson, Conn.

Marvel Accessories Mfg. Co., 1220 W. Sixth St., Cleveland, O.

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

Mossberg Co., Frank, Attleboro, Mass.

Mosco—See Motor Specialties Co.

Motor Specialties Co., Waltham, Mass. "Mosco."

Nance Mfg. Co., 1348 N. Clark St., Chicago.

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)

New Favorite Mfg. Co., Columbus, O.

Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Humboldt."

Sioux—See Jonas, C. N. & F. W.

Spiro Mfg. Co., C., 68-72 E. 131st St., New York, N. Y. "Uniq."

Uniq—See Spiro Mfg. Co.

Wall, J. H., 290 Hope St., Bristol, R. I.

Whitcomb—See American Radio & Research Corp.

White Mfg. Co., 511 Lincoln Way, South Bend, Ind.

Whitehouse Mfg. Co., 42 Elm St., Newark, N. J. (See page 637.)

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AMERICAN DIE & TOOL CO.

Machining, Hardening,
Gear Cutting, Grinding, Automatic
Screw Machine Products

READING PENNSYLVANIA

BISHOP IGNITION
Lighting
Starting
CABLES

Samples and Prices sent only to Automobile
Manufacturers and Jobbers

BISHOP GUTTA-PERCHA CO. 420 E. 25TH ST. NEW YORK

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TOOLS, Valve Lifting and Spring Compressing

(For compressing valve springs so that the pin or key may be readily removed or inserted and the valve taken out or put in)

American Metal Parts Mfg. Co.—See Fulton Co.

Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.

Bridgeport Hardware Mfg. Corp., 461 Iranistan Ave., Bridgeport, Conn. (Sole Distributors for Fay Mfg. Co., New York, N. Y. "Fay-Oh-Rite.")

Brocksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.

Bryant—See Stevens & Co.

Buffum Tool Co., Louisiana, Mo. (See page 529.)

C. P.—See Clinton Machine Works.

Clinton Machine Works, 460 High St., Clinton, Mass. "C. P."

Duby, J. F., 11 River St., Mattapan, Mass. (See page 729.)

E-Z—See Syracuse Wrench Co.

Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.

Efemco—See Foster, Merriam & Co.

Essen Motor Service, 138-40 Lott St., Brooklyn, N. Y.

Fairmount Tool & Forging Co., 10611 Quincy Ave., Cleveland, O.

Fay-Oh-Rite— See Bridgeport Hardware Mfg. Co.

Fay Mfg. Co.—See Bridgeport Hardware Mfg. Corp.

Feilbach, A. O., North Milwaukee, Wis.

Fish-Best Co., 37 S. Wabash Ave., Chicago, Ill.

Fits-Awl—See Wayland Specialty Mfg. Co.

Flexible Valve Remover Co., 201 Eddy St., Providence, R. I.

Foster, Merriam & Co., Meriden, Conn. "Efemco." (See page 821.)

Freehand—See Valve Remover Sales Co.

Fulton Co., 75th & National Aves., Milwaukee, Wis. (Sole Distributors for American Metal Parts Mfg. Co., Milwaukee, Wis. "Handy." (See page 1034.)

Gasco Mfg. Co., Lancaster, Pa. (Sole Distributors for K-D Mfg. Co., Lancaster, Pa.) (See page 993.)

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 174 and 175.)

Goodell-Pratt Co., Greenfield, Mass.

Graham Roller Bearing Co., Coudersport, Pa. (See page 283.)

Hallbauer Lifter Co., 1537 Wellston Ave. (Wellston), St. Louis, Mo.

Hallgren, Carl, 682 Summit Ave., Pasadena, Cal.

Handy—See Fulton Co.

Hedden Place Machine Co., East Orange, N. J. "Stevenson." (See page 1077.)

Hoadley, F. B., 479 Willow St., Waterbury, Conn.

Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributor for Graham & Gasco Tools.) (See page 1187.)

Humboldt—See Republic Auto Parts Co.

K-D Mfg. Co.—See Gasco Mfg. Co.

King Pressed Steel & Mfg. Co., 18 Hawthorne St., Newton, Mass.

Kraeuter & Co., Newark, N. J. (See page 711.)

Loomis-Beardsley Co., Columbus, O. (See page 903.)

Mapson Mfg. Co.—See Porter, Inc.

Martin & Co., Edward, 22 S. Clinton St., Chicago, Ill. "Perfection."

Mechanical & Electrical Mfg. Co., 2227 Prairie Ave., Chicago, Ill. "Triumph."

Merts Co., H. B., 1406 Rutherford Ave., Pittsburgh, Pa.

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

Mickey—See Van's Auto Specialty Co.

Milwaukee Auto Specialty Mfg. Co., 795-15 Chestnut St., Milwaukee, Wis. "Radium."

Morgan Mfg. Co., Court St., Keene, N. H. "Utility." (See page 751.)

National Jack & Mfg. Co., 130-34 S. Clinton St., Chicago, Ill.

Never Slip—See Eckhouse & Co.

New Favorite Mfg. Co., Columbus, O.

Newton Mfg. Co., Church St., Plainville, Conn.

Only Grease Gun Co., Newton, Ia. "T. & L."

Oro—See Au-To Compressor Co.

Perfect Handle—See Smith & Co.

Perfection—See Martin & Co.

Perfection—See Porter, Inc.

Porter, Inc., 1338 Fifth St., San Diego, Cal. (Sole Selling Agents for Mapson Mfg. Co., Los Angeles, Cal. "Perfection.")

Price Auto Tool Works, W. W., Elm Grove, W. Va.

Radium—See Milwaukee Auto Specialty Co.

Republic Auto Parts Co., 31-35 Tenth St., Long Island City, N. Y. "Humboldt."

Sees-All Mfg. Co., 1810 W. Lake Ave., Seattle, Wash.

Sjoholm, N. P., 11 Westmoreland Pl., St. Louis, Mo.

Smith & Co., H. D., Plantsville, Conn. "Perfect Handle," "Ultimate."

Stevens & Co., 375 Broadway, New York, N. Y. "Bryant." (See page 1147.)

Stevenson—See Hedden Place Machine Co.

Syracuse Wrench Co., 501 E. Water St., Syracuse, N. Y. "E-Z."

T. & L.—See Only Grease Gun Co.

Trex—See Trexler Co.

Trexler Co., 1418 Walnut St., Philadelphia, Pa. "Trex." (See page 925.)

Triumph—See Mechanical & Electrical Mfg Co.

Ultimate—See Smith & Co.

Utility—See Morgan Mfg. Co.

Valve Remover Sales Co., 1207 Oak St., Kansas City, Mo. "Freehand."

Van's Auto Specialty Co., Clyde, O. "Mickey."

Vichek Tool Co., Cleveland, O.

Wayland Specialty Mfg. Co., Wayland, N. Y. "Fits-Awl." (See page 380.)

TOOLS, Valve Lifting and Spring Compressing, for Fords

(For compressing valve springs so that the pin may be readily removed or inserted and the valve taken out or put in)

Abel—See Schnabel Co.

American—See Fairbanks Co.

Chicago Mfg. & Distributing Co., 411 S. Sangamon St., Chicago, Ill. "C. M. & D."

C. M. & D.—See Chicago Mfg. & Distributing Co.

Donlin Auto Co., C. A., Hopkins, Mo.

Duby, J. F., 11 River St., Mattapan, Mass. (See page 729.)

Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.

Edelmann & Co., E., 2633 N. Crawford Ave., Chicago, Ill.

Efemco—See Foster, Merriam & Co.

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FENDERS

MANUFACTURERS:

SERVICE in fulfilling your sheet metal requirements is our aim. You incur no obligation in sending us the specifications for FENDERS, HOODS, SPLASH APRONS, and FUEL TANKS on your passenger car, truck or tractor.

DISTRIBUTORS and DEALERS:

REPLACEMENT FENDERS for BUICK Cars for Models 1917 to 1920, inclusive, carried in stock.

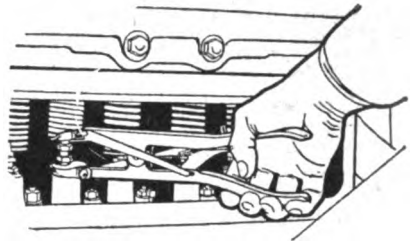
Write for our prices and become a satisfied customer

The high grade of our ENAMELED products pleases the car manufacturer, distributor, dealer and owner alike.

The Fostoria Pressed Steel Company

FOSTORIA, OHIO

K-D "Parallel Lift" Valve Lifters



Open and Close Parallel

Universal Lifter, - $2.00

Special Lifter for Ford, $1.00

Gasco Mfg. Co.

Lancaster, Pa. U. S. A.

Makers of Gasco Air Compressors

BEARDSLEY NEVER-SLIP VALVE LIFTER

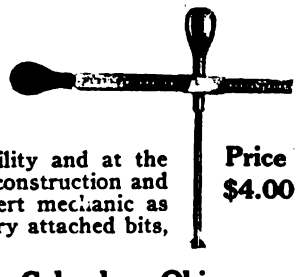
FORD CAR SPECIAL	$1.25
DODGE SPECIAL	1.75
FORDSON TRACTOR	1.75
UNIVERSAL (Fits All Cars)	2.50

Regardless of the pin angle in the valve stem, this lifter cannot catch on it. Lifts with the valve in any position. And at the same time it lifts the spring, it holds the valve down.

This dandy tool makes the installing of a new Ford camshaft a one-man job, and the grinding of valves a matter of minutes instead of hours. It strikes a mighty responsive chord with every motor mechanic.

Beardsley Hi-Speed

Valve Grinder



Can Be Used on Any Car

This Valve Grinder has speed, accuracy and durability and at the same time is a tool which is light and handy, simple in construction and easily operated. This grinder is preferred by the expert mechanic as well as the amateur. They come complete with necessary attached bits, both with long and short shank.

Price $4.00

Mfg. by The LOOMIS-BEARDSLEY CO., Columbus, Ohio

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TOOLS, Valve Lifting and Spring Compressing, for Fords (Cont'd)

Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill. "American.") (See pages 137 to 140.)

Fish-Best Co., 37 S. Wabash Ave., Chicago, Ill.

Fitz-Awl—See Wayland Specialty Mfg. Co.

Foster, Merriam & Co., Meriden, Conn. "Efemco." (See page 821.)

Fulton Co., Milwaukee, Wis. (See pages 1031 to 1036.)

Gasco Mfg. Co., Lancaster, Pa. (Sole Distributors for K-D Mfg. Co., Lancaster, Pa. (See page 993.)

Graham Roller Bearing Co., Coudersport, Pa. (See page 283.)

Halladay Co., L. P., 501 N. Monroe St., Streator, Ill.

Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributor for Graham & Gasco Tools.) See page 1187.

Humboldt—See Republic Auto Parts Co.

King Pressed Steel & Mfg. Co., 13 Hawthorne St., Newton, Mass.

Larson Tool & Stamping Co., Olive St., Attleboro, Mass.

Loomis-Beardsley Co., Columbus, O. (See page 993.)

Mapson Mfg. Co.—See Porter, Inc.

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)

Never-Slip—See Staff, J. Wadsworth.

Parrott Metal Stamping Works, Ohioville, N. Y

Perfection—See Porter, Inc.

Porter, Inc., 1338 Fifth St., San Diego, Cal. (Sole Selling Agents for Mapson Mfg. Co., Los Angeles, Cal. "Perfection.")

Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Humboldt."

Schnabel Co., Henry M., 27-31 Lake Ave., Greenwich, Conn. "Abel."

Service Station Equipment Co.—See Fairbanks Co.

Stadco—See Stadeker Metal Specialty Co.

Stadeker Metal Specialty Co., 310 S. Canal St., Chicago, Ill. "Stadco."

Wayland Specialty Mfg. Co., Wayland, N. Y. "Fitz-Awl." (See page 399.)

Whitehouse Mfg. Co., 42 Elm St., Newark, N. J. (See page 637.)

TOOLS, Valve Reseating or Facing

(Special reamers for renewing worn or pitted valve seats and cutters for truing and refacing poppet valves)

Albertson & Co.—See Jonas, C. N. & F. W.

American Valve Tool Mfg. Co., 354 W. 50th St., New York, N. Y.

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern and Southern Distributors for Sioux Tools.) (See page 275.)

Auto Mechanics Tool Co., 2501 S. Washington St., Peoria, Ill. "Peoria."

Bean—See Liberty Metal Products Co.

Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.

Brooks Mfg. Co., J. W., 16 Mt. Joy Pl., New Rochelle, N. Y. "Economic."

Dunham Co., D. F., 331 Fourth St., Oxnard, Cal. "Simplicity." (See page 487.)

Economic—See Brooks Mfg. Co.

Fosnacht—See National Auto Specialty Co.

Graham Roller Bearing Co., Coudersport, Pa. (See page 283.)

Halburn Co., 317 W. Pico St., Los Angeles, Cal.

Hoerner Mfg. Co., 3929 Moneta Ave., Los Angeles, Cal. (See page 1131.)

Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributor for Graham Tools.) (See page 1187.)

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Albertson & Co., Sioux City, Ia.) "Sioux."

Liberty Metal Products Co., Front St. & First Ave., Berea, O. "Bean."

National Auto Specialty Co., Tama, Ia. "Fosnacht."

Peoria—See Auto Mechanics Tool Co.

Quinn—See Mullarky, G. E.

Sargent, James M., Graniteville, Mass.

Savidge Co., A. C., 75 N. New Jersey St., Indianapolis, Ind.

Simplicity—See Dunham Co., D. F.

Simplicity—See Universal Equipment & Supply Co.

Sioux—See Jonas, C. N. & F. W.

Skinner Co., M. B., 562 W. Washington Blvd., Chicago, Ill

Universal Equipment & Supply Co., Syracuse, N. Y. "Simplicity." (See page 727.)

TOOLS, Valve Reseating or Facing, for Fords

(Special reamers for renewing worn or pitted valve seats and cutters for truing and refacing valves)

Albertson & Co.—See Jonas Co.

American—See Fairbanks Co.

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern and Southern Distributors for "Sioux" Tools.) (See page 275.)

Bean—See Liberty Metal Products Co.

Detroit Garage Equipment Co., 406 E. Jefferson Ave., Detroit, Mich.

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.

Efemco—See Foster, Merriam & Co.

Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill. "American.") (See pages 137 to 140.)

Fosnacht—See National Auto Specialty Co.

Foster, Merriam & Co., Meriden, Conn. "Efemco." (See page 821.)

G. B. Garage & Mfg. Co., 299 Franklin St., Hempstead, N. Y.

Hoerner Mfg. Co., 3929 Moneta Ave., Los Angeles, Cal. (See page 1131.)

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Albertson & Co., Sioux City, Ia.) "Sioux."

Liberty Metal Products Co., Front St. & First Ave., Berea, O. "Bean."

National Auto Specialty Co., Tama, Iowa. "Fosnacht."

Noonan Mfg. Co., D. R., Paris, Ill.

Savidge Co., A. C., 75 N. New Jersey St., Indianapolis, Ind.

Service Station Equipment Co.—See Fairbanks Co.

Sioux—See Jonas, C. N. & F. W.

Spiro Mfg. Co., C., 68-72 E. 131st St., New York, N. Y. "Uniq."

Stevens & Co., 375 Broadway, New York, N. Y. (See page 1147.)

Uniq—See Spiro Mfg. Co.

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Incredible

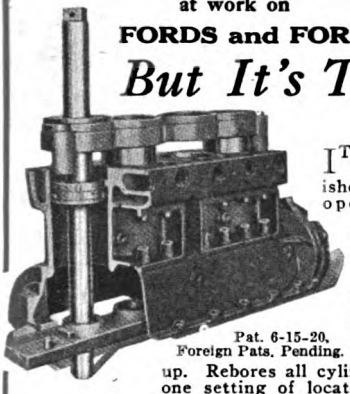
That's what the first dealer said who saw

The Champion Reboring Tool

at work on

FORDS and FORDSONS

But It's True



Pat. 6-15-20. Foreign Pats. Pending.

IT rebores and refinishes in one operation. Rebores Model T Blocks in less than 30 minutes, including time for setting up. Rebores all cylinders with one setting of locating plates. Rebores in true alignment with crank shaft bearings, and leaves a satiny, absolutely accurate finish. Certain in operation; you can't make a mistake. It's a big time saver, money maker and a tool every Ford and Fordson dealer should have.

For further particulars, address

Champion Manufacturing Co.
2908-10 West Fletcher St., Philadelphia

Atlas Grinding Tool

Price complete, $10.00 net. Prepaid. Extra Cutters 30 cents each.

Pat. Nov. 11, 1919

Atlas Crankshaft Grinder

Don't attempt to scrape a bearing to crank pin that has worn oval and don't pay a machine shop $15 or $25 for a lathe job.

It will true up a crankshaft to less than one-thousandth of an inch in less than one hour without removing shaft from crankcase. Adjustable to all crank pins from 1-$\frac{1}{8}$ to 2½-in. diameter. But one tool needed, cutters good for truing 10 to 20 pins. 5,000 in use.

Send for circular describing

Atlas Garage Unit

A machine for testing and straightening crankshafts, and gear press with housing assembly and piston vice attachments.

Jobbers: An attractive proposition awaits your inquiry.

Atlas Manufacturing Company
Millvale Station, Automotive Equipment
PITTSBURGH, PA.

Showing Tool Shrinking Rim

The Hercules Rim Tool Co.

Factory:
115 Commercial St., Los Angeles, Cal.

Chicago Office:
6243 South Western Avenue

Most Powerful and Efficient Labor Saving Rim Tool Ever Devised

Indispensable for Garages *and* Vulcanizers

Will last indefinitely. Breaks, shrinks and expands all makes split automobile rims without being removed from rim.

Automatically locks and holds rim in shrunken position so it can be removed from tire and replaced inside tire with utmost ease and safety.

Built in two sizes: list prices
$8.00 *and* $12.00

For heavier shop work we recommend the heavier tool. ASK YOUR DEALER.

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Wilson, K. R., 10-16 Lock St., Buffalo, N. Y. (See page 611.)

TOOLS, VALVE RETHREADING—See Tools, Tire Valve Rethreading

TOOLS, VULCANIZING—See Tools, Tire Vulcanizing

TOOLS, WHEEL TRUEING—See Dressers, Emery Wheel

TOOTH CHAMFERING MACHINES—See Machines, Gear Tooth Chamfering

TOOTHING MACHINES, AIRCRAFT PROPELLER — See Machines, Aircraft Propeller Toothing

TOP BOW CLAMPS FOR FORDS—See Clamps, Top Bow

TOP BOW DRESSING MACHINES — See Machines, Top Bow Dressing

TOP BOW CLAMPS—See Holders, Top

TOP BOW SOCKETS—See Sockets, Bow

TOP BOWS—See Bows, Tops

TOP CLAMPS—See Holders, Top

TOP CLAMPS FOR FORDS—See Clamps, Top Bow

TOP CONVERTORS FOR FORDS—See Converters, Top

TOP COVERS—See Covers, Top

TOP CURTAIN POCKETS FOR FORDS—See Pockets, Top Curtain

TOP CURTAINS—See Curtains, Special Top

TOP DRESSING—See Dressing, Leather; also Dressing, Mohair

TOP ENVELOPES—See Covers, Top

TOP FABRICS—See Cloth; also Leather

TOP FIXTURES—See Fasteners, Curtain; also Fittings, Top; also Irons, Body; also Irons, Slat; also Rests, Bow; also Separators, Bow; also Sockets, Bow

TOP HOLDERS—See Holders, Top

TOP HOLDERS FOR FORDS—See Clamps, Top Bow

TOP IRONS—See Irons, Body

TOP LINING DYE—See Dye, Top Lining

TOP PATCHES—See Patches, Top

TOP REPAIR CEMENT—See Cement, Top Repair

TOP STRAPS—See Straps, Leather

TOP VISORS—See Visors and Rain Shields

TOPS, Automobile

(Including cape tops and demountable or winter tops of all kinds)

A-W—See Adams-Williams Mfg. Corp.

A & E Auto Top Co., 33-35 E. Cross St., Ypsilanti, Mich. (See page 325.)

Accurate Cover Co., 373 Canal St., New York, N. Y.

Acme Auto Top Co., 1421 Irving St., N. W., Washington, D. C.

Adams-Williams Mfg. Corp., 351 W. 52d St., New York, N. Y. "A-W."

Albright Co., S. S., 13th & U Sts., Sacramento, Cal.

All-Season Top Co., 4403 St. Aubin Ave., Detroit, Mich.

Allweather Top Co., 654 Carnegie Ave., Cleveland, O.

Alper Auto Top Co., 31 Willow St., Waterbury, Conn.

Alvey—See Hummer Auto Top Works.

American Auto Trimming Co., 873 E. 72d St., Cleveland, O.

Anchor Top & Body Co., 2000 South St., Cincinnati, O. (See page 999.)

Arizona Auto Top Co., 451 N. Central Ave., Phoenix, Ariz.

Atlanta Automobile Top & Trimming Co., 155-57 Edgewood Ave., Atlanta, Ga.

Auto Cape Top Co., 2324-28 S. Michigan Ave., Chicago, Ill.

Auto Leather Goods Co., 11270 Linden Ave., Stratford, Conn.

Badger—See McAvoy Bros. & Co.

Baltimore Buggy Top Co., 107-13 W. Mt. Royal Ave., Baltimore, Md.

Barton Auto Top Co., 4445 Woodward Ave., Detroit, Mich.

Birmingham Auto Top Co., 305 S. 20th St., Birmingham, Ala.

Bison Trimming Co., 1135 Jefferson St., Buffalo, N. Y.

Blasier-Sanborn Mfg. Co., 335 Columbia St., Utica, N. Y.

Bliss Auto Top Co., C. P., 1351 Court Pl., Denver, Colo.

Boston Auto Top Co., 98-100 Massachusetts Ave., Boston, Mass.

Brackbill, Chas., 2419 N. Broad St., Philadelphia, Pa.

Brackbill Auto Enclosure Co., B. F., 226 E. New St., Lancaster, Pa.

Briscoe Motor Corp., Jackson, Mich.

Briggs Mfg. Co., 55 Leuschner Ave., Detroit, Mich.

Buob & Scheu, 500-10 Webster St., Cincinnati, O. (See page 325.)

C-Den—See Comfort Cushion Co.

Central Auto Top & Leather Co., 419½ N. Capitol Blvd., Indianapolis, Ind. "Swo-Car-Mar."

Century Auto Top & Supply Co., 50 E. 26th St., Chicago, Ill.

Chanslor & Lyon Top Co., 1206 S. Grand Ave., Los Angeles, Cal.

Chicago Auto Equipment Co., 808-10 W. Jackson Blvd., Chicago, Ill.

Chicago Carriage & Trimming Co., 2514-20 S. Michigan Ave., Chicago, Ill.

Chicago Coach & Carriage Co., 1222-31 S. Michigan Ave., Chicago, Ill.

Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Wilson."

Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.

Columbia Tire & Top Co., 922 Commonwealth Ave., Boston, Mass.

Comfort Cushion Co., 1629 Germantown Ave., Philadelphia, Pa. "C-Den."

Continental Auto Top Mfg. Co., 3900 Washington Ave., St. Louis, Mo.

Cooling Carriage Co., 406 French St., Wilmington, Del.

Copp Co., George W., 518 W. 58th St., New York, N. Y. (Eastern Distributors for "Anchor" Tops.) (See page 323.)

Cream City Trimming Co., 67-71 Juneau Ave., Milwaukee, Wis.

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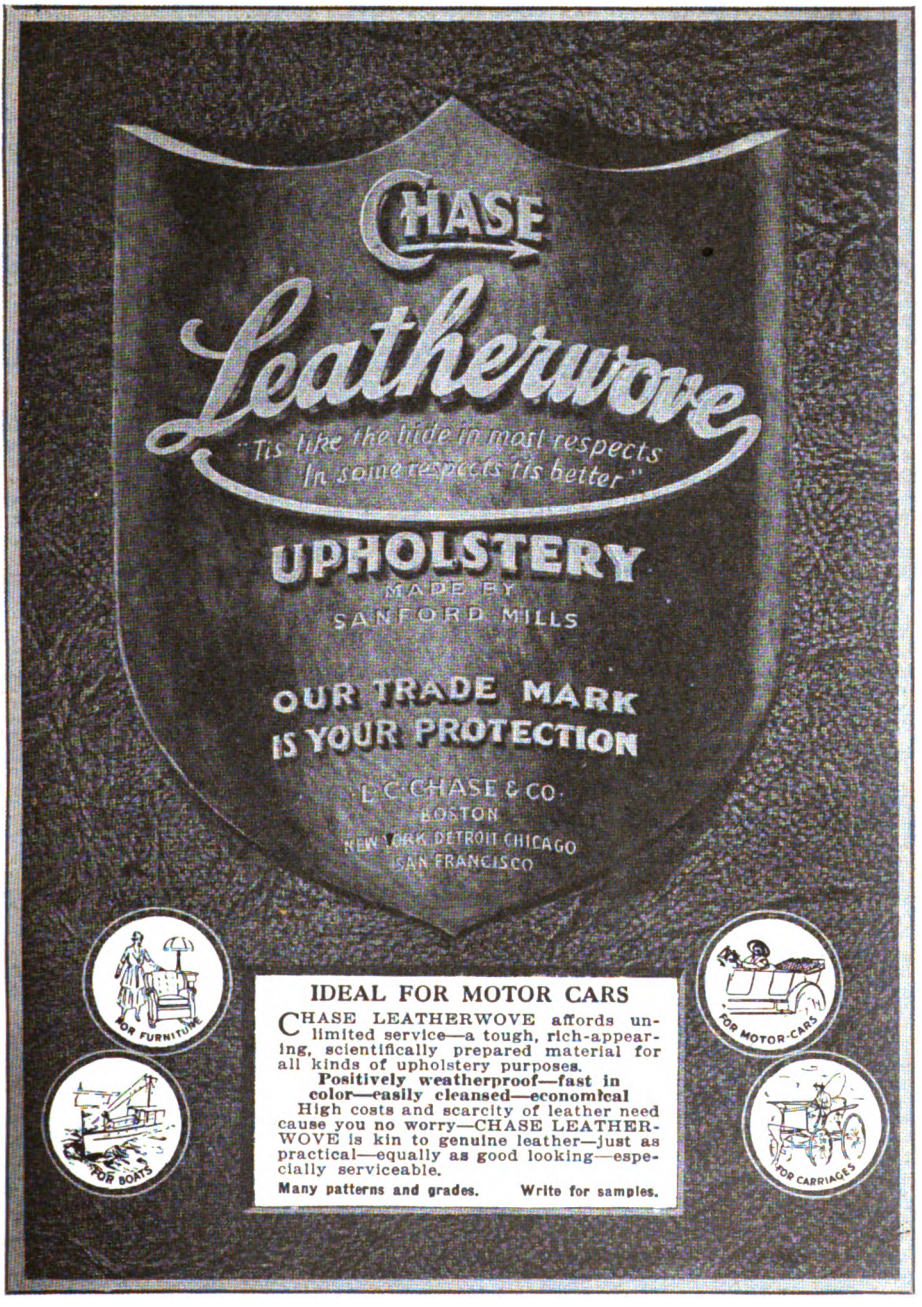

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TOPS, Automobile (Continued)

Dallas Buggy Top Co., 562 Main St., Dallas, Tex.

De Luxe—See Kalamazoo Sedan Co.

Detroit Weatherproof Body Co., 600 S. Saginaw St., Pontiac, Mich.

Donegan Auto Body & Specialty Co., 339 Trumbull St., Hartford, Conn.

Edwards Mfg. Co., 1339 Clinton Ave., Detroit, Mich.

Empire Auto Top Co., 222-26 N. 21st St., Philadelphia, Pa.

Erby & Sons Co., Wm., 121-27 W. Grand Ave., Chicago, Ill.

Erdman-Guider Co., 2290 Woodward Ave., Detroit, Mich. (See page 131.)

Fehring Carriage Co., 601-09 Third St., Columbus, Ind.

Flagler Co., 159 Carlton Ave., Brooklyn, N. Y.

Frankel Specialties Corp., 356 W. 50th St., New York, N. Y.

Gabel Co., A. H., Goodman St. & Monroe Ave., Rochester, N. Y. (See page 1125.)

Gates Mfg. Co., 835 N. Meridian St., Indianapolis, Ind.

Geco—See Glover Equipment Co.

Genesee Mfg. Co., 516-18 Harrison St., Flint, Mich.

General Top Co., 4310 St. Clair Ave., Cleveland, O.

Gillig—See Harvey Top & Body Co.

Glover Equipment Co., 412 N. Capitol Ave., Indianapolis, Ind. "Geco."

Goldin Mfg. Co., 127-31 S. Forsyth St., Atlanta, Ga.

Hartman-Townsend Co., 14th & West Sts., Indianapolis, Ind.

Harvey Top & Body Co., 918-20 Main St., Buffalo, N. Y. "Gillig."

Hayes & Miller Co., 513-22 E. 57th St., New York, N. Y.

Herrity Co., E. A., 60 Summer St., Stamford, Conn.

Holcker-Elberg Mfg. Co., 16th & McGee Sts., Kansas City, Mo.

Holden One-Man Top Co., 1776 Broadway, New York, N. Y.

Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributor for Wilson Tops.) (See page 1187.)

Hummer Auto Top Works, Tenth & Lincoln Sts., Chicago Heights, Ill. "Alvey."

Hund & Co., H. E., 1208 Fort St., W., Detroit, Mich.

Huntington Auto Top Works, New York Ave., Huntington, N. Y.

Indiana Top & Vehicle Co., Laurenceburg, Ind.

Inland Auto Top Factory, 211 S. Monroe St., Spokane, Wash.

Johnston Commercial Body Co., Fort Smith, Ark.

Jones & Pimm Co., 422 W. Onondaga St., Syracuse, N. Y.

Kalamazoo Sedan Co., Kalamazoo, Mich. "De Luxe." (See page 1187.)

Kingsbury-Leahy Co., Albany, N. Y.

Kints Service & Mfg. Co., 1035-37 Third Ave., Terre Haute, Ind.

Kroh Mfg. Co., C. Z., 1212-14 Jackson Ave., Toledo, O.

La Due Auto Top Co., 1021 Monroe St., Toledo, O.

Lamco-See Lehman Mfg. Co.

Lancaster Body Co., Fountain & New Holland Aves., Lancaster, Pa.

Larkins & Co., Geary St. at First Ave., San Francisco, Cal. (See page 384.)

Laroche, J. P., 5918-20 S. Ashland Ave., Chicago, Ill.

Lehman Mfg. Co., 310 Fourth St., Cannelton, Ind. "Lamco." (See page 151.)

Liberty Top & Tire Co., 123 E. Eighth St., Cincinnati, O.

Lockwood Mfg. Co., Kansas City, Mo. (See page 323.)

McAvoy Bros. & Co., Racine, Wis. "Badger."

McCardell & Co., J. R., 395 S. Warren St., Trenton, N. J.

McDonald Bros., 1005-07 E. Pike St., Seattle, Wash.

Mann-Aldrich Carriage Co., 1300 Lincoln St., Denver, Colo.

Miller, Hicks & Hewitt, 509-15 W. 56th St., New York, N. Y.

Mills Cabinet Co., Racine Junction, Racine, Wis. "Racine."

Mobile Top Co., 26 Selden Ave., Detroit, Mich.

Murray & Co., P. A., Newton, Mass.

National Auto Top Co., 510 W. Broad St., Richmond, Va.

Novelty Carriage Works, 812 Second Ave., Spokane, Wash.

Paco Mfg. Co., Franklin & Seventh Sts., Peoria, Ill.

Peerless Top Co., York St. & Central Ave., Cincinnati, O.

Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. (See page 317.)

Powers Mfg. Co., Waterloo, Iowa. (See page 593.)

R. C. Fabric Co., 1383 Bedford Ave., Brooklyn, N. Y.

Racine—See Mills Cabinet Co.

Production Auto Top Co., 372 Fourth Ave., Long Island City, N. Y.

Reardon Top Shop, Clark St., Amesbury, Mass.

Rex Mfg. Co., Connersville, Ind. (See page 1121.)

Rhodes, W. C., 1611 Vine St., Philadelphia, Pa.

Samson Auto Top & Equipment Co., 103-05 Fountain St., Providence, R. I.

Sargent & Ham Co., 28-32 Scotia St., Boston, Mass.

Schreiber Carriage Mfg. Co., Chariton, Ia.

Sharrer Patent Top Co., 250 W. 54th St., New York, N. Y. (See page 1001.)

Shields Carriage Co., 11 Carriage Ave., Amesbury, Mass.

Shugers Mfg. Co., 1002-04 S. Los Angeles St., Los Angeles, Cal. (See page 337.)

Sioux City Auto Top Co., 310 Virginia St., Sioux City, Ia.

Springfield Auto Top & Upholstery Co., 126 Chestnut St., Springfield, Mass.

Springfield Harness Co., 55-59 Dwight St., Springfield, Mass.

Standard Auto Top & Body Co., 1333 Race St., Philadelphia, Pa.

Standard Top Co., (Kingston), Wilkes-barre, Pa.

Steiner, Jos., 409 N. Seventh St., Manitowoc, Wis.

Sterling Top & Equipment Co., 513-22 W. 57th St. New York, N. Y.

Sutorius Auto Top Co., 621-23 Third Ave., S., Minneapolis, Minn.

Swo-Car-Mar—See Central Auto Top & Leather Co.

Tatco—See Thomas Auto Top Co.

Thomas Auto Top Co., 417 E. Jackson St., Muncie, Ind. "Tatco."

Thompson Co., Robert, 1015 S. Grand Ave., Los Angeles, Cal. (See page 1119.)

Union Top Mfg. Co., 346 Collins Ave., E., Pittsburgh, Pa.

Universal Trimming Co., 2425 Michigan Ave., Chicago, Ill.

Vetter Auto Body Co., 214-16 W. 65th St., New York, N. Y.

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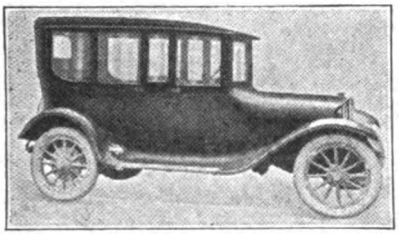
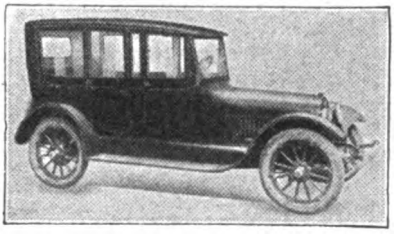
ANCHOR

COUPE AND SEDAN

DEMOUNTABLE GLASS-ENCLOSED TOPS



Dodge touring car equipped with an Anchor top. Model for 1916-17-18-19-20 Cars. Also attractive Roadster Model.



Buick Touring car. 1916-17-18-19-20 Models. Handsome tops also for other Buick Models including roadsters.

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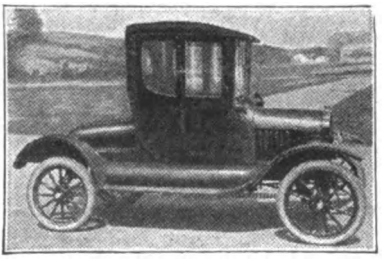
Anchor Tops are strongly constructed throughout, fit closely to bodies of various standard cars and convert them into attractive and comfortable sedans and coupes. All windows are glass. Doors equipped with ventilating windows. Electric dome light furnishes interior illumination.

Ford Touring Car



Ford Roadster

Above illustrations only show few of the many models that we can furnish. Write for complete descriptive literature and quotations.

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TOPS, Automobile (Continued)

Waynesburg Carriage Co., Waynesburg, O.
Western Auto Top Co., 1206-10 Jackson St., Omaha, Neb.
Wilcox Co., M. I., Water St., Toledo, O.
Williams Auto Top Works, C. T., 1107 Seventh St., Wichita Falls, Tex.
Wilson—See Cincinnati Auto Specialty Co.
Wright & Co., C. E., Norfolk, Va.

TOPS, Special and One-Man, for Fords

A. & E. Auto Top Co., 33-35 E. Cross St., Ypsilanti, Mich. (See page 325.)
A-W—See Adams-Williams Mfg. Corp.
Accurate Cover Co., 373 Canal St., New York, N. Y.
Adams-Williams Mfg. Corp., 351 W. 52d St., New York, N. Y. "A-W."
American Auto Top Co., N. Washington Ave. & Belt R. R., Delphi, Ind. "Faultless."
Anchor Top & Body Co., 2000 South St., Cincinnati, O. (See page 999.)
Atlanta Automobile Top & Trimming Co., 155-57 Edgewood Ave., Atlanta, Ga.
Baltimore Buggy Top Co., 107-13 W. Mt. Royal Ave., Baltimore, Md.
Brackbill, Charles, 2419 N. Broad St., Philadelphia, Pa.
Brackbill Auto Enclosure Co., B. F., 226 E. New St., Lancaster, Pa.
Central Auto Top & Leather Co., 419½ N. Capitol Ave., Indianapolis, Ind.
Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Wilson."
Cleveland Top & Specialty Co., Carnegie & E. 65th Sts., Cleveland, O.
Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.
Close-Tite—See Longdin-Brugger Co.
Continental Auto Top Mfg. Co., 3900 Washington Ave., Chicago, Ill.
Copp Co., George W., 518 W. 58th St., New York, N. Y. (Eastern Distributor for "Anchor" Tops.) (See page 323.)
Crawford Mfg. Co., 211 N. Foushee St., Richmond, Va.
De Luxe—See Ero Mfg. Co.
Detroit Slip Cover Co., 449 E. Canfield Ave., Detroit, Mich.
Detroit Weatherproof Body Co., 600 S. Saginaw St., Pontiac, Mich.
Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. "De Luxe." (See page 545.)
Faultless—See American Auto Top Co.
Goldin Mfg. Co., 130-32 Marietta St., Atlanta, Ga.
Gordon Co., J. P., 303 N. Fourth St., Columbus, O. (See page 319.)
Goshen Buggy Top Co., Goshen, Ind.
Harper Buggy Co., Columbia City, Ind.
Hodes-Zink Mfg. Co., 312 W. State St., Fremont, O. "Surefit."
Holden One-Man Top Co., 1776 Broadway, New York, N. Y.
Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributor for Wilson Tops.) (See page 1187.)
Horstman Auto Top Co., 1926 Prospect Ave., Cleveland, O.
Hummer Auto Top Works, Tenth & Lincoln Sts., Chicago Heights, Ill.
Koupet Auto Top Co., Belleville, Ill.
Lamco—See Lehman Mfg. Co.
Lehman Mfg. Co., 310 Fourth St., Camelton, Ind. "Lamco." (See page 151.)
Liberty Top & Tire Co., 123 E. Eighth St., Cincinnati, O.
Lockwood Mfg. Co., Kansas City, Mo. (See page 323.)
Longdin-Brugger Co., Fond du Lac, Wis. "Close-Tite." (See page 149.)
Miller Auto Top & Body Mfg. Co., Caro, Mich.
Paco Mfg. Co., Franklin & Seventh Sts., Peoria, Ill.
Penn Square Body Co., 5405 Euclid Ave., Cleveland, O.
Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. (See page 317.)
Powers Mfg. Co., Waterloo, Iowa. (See page 593.)
R-E—See Roose Mfg. Co.
Roose Mfg. Co., 327-33 W. Main St., Louisville, Ky. "R-E." (See pages 129, 151, 325 and 327.)
Seaman Co., W. S., 486 Virginia St., Milwaukee, Wis.
Springfield Harness Co., 55-59 Dwight St., Springfield, Mass.
Sterling Top & Equipment Co., 513-23 W. 57th St., New York, N. Y.
Surefit—See Hodes-Zink Mfg. Co.
Unico—See Unit Construction Co.
Van Auken Co., South Blvd. & Grand Trunk R. R., Pontiac, Mich.
Warner Woodworking Co., 284 Moss Ave., Highland Park, Mich.
Weiss & Son, Chas., 4715-19 Cottage Grove Ave., Chicago, Ill.
Western Auto Top Co., 1206-10 Jackson St., Omaha, Neb.
Whitehall Auto Top Co., 539 Whitehall St., Atlanta, Ga.
Wilson—See Cincinnati Auto Specialty Co.

TORCHES, Acetylene Brazing and Welding

Brooks Machine Co., 225 W. Lewis St., Wichita, Kans.
Hicken Sod-Tor-Lite Co., B. E., Prairie Hill, Mo. "Sod-Tor-Lite."
Prest-O-Lite Co., 30 E. 42d St., New York, N. Y. (See page 1221.)
Rego—See Universal Oxygen Co.
Sod-Tor-Lite—See Hicken Sod-Tor-Lite Co.
Universal Oxygen Co., 14th & Illinois Sts., Sheboygan, Wis. "Rego."
Washburn Burner Corp., Kokomo, Ind.

TORCHES, AUTOGENOUS WELDING—See Machines, Autogenous Welding

TORCHES, OXY-ACETYLENE WELDING—See Machines, Autogenous Welding

TORCHES and FURNACES, Gasoline or Kerosene

American Stove Co. (Ringen Div.) 825 Chouteau Ave., St. Louis, Mo. "Vesuvius."
American Stove Co. (Reliable Stove Co. Div.), E. 40th St. & Penna. R. R., Cleveland, O. "Reliable."
Anthony Co., 138 West Ave., Long Island City, N. Y. (See page 747.)
Ashton Mfg. Co., 184 Emmet St., Newark, N. J. "Red-Hot."
Barthel—See Globe Gas Light Co.
Bernz Co., Otto, 17 Ashland St., Newark, N. J.
Bolte Mfg. Co., 125-27 S. Racine Ave., Chicago, Ill.
Carleton Co., 176 Summer St., Boston, Mass. "Imp."

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TORCHES, and FURNACES, Gasoline or Kerosene (Continued)

Clayton & Lambert Mfg. Co., Detroit, Mich. (See page 981.)

Fairbanks Co., New York, N. Y. (Sole Distributors for Hempy-Cooper Mfg. Co., Kansas City, Mo.) (See pages 137 to 140.)

Globe Gas Light Co., 27 Union St., Boston, Mass. "Barthel."

Handy Torch Co., 69 Genesee St., Utica, N. Y.

Hauck Mfg. Co., 126-34 Tenth St., Brooklyn, N. Y.

Hempy-Cooper Mfg. Co.—See Fairbanks Co.

Hot Blast—See Turner Brass Works.

Imp—See Carleton Co.

Khotal—See Otto Metal Goods Corp.

Kwikheet—See Gemco Mfg. Co.

Otto Metal Goods Corp., Wm. H., 401-07 St. Pauls Ave., Jersey City, N. J. "Khotal."

Quadriga Mfg. Co., 213-21 W. Grand Ave., Chicago, Ill. "Walters."

Red-Hot—See Ashton Mfg. Co.

Reliable—See American Stove Co.

Turner Brass Works, Sycamore, Ill. "Hot Blast." (See page 177.)

Vesuvius—See American Stove Co.

Volcano Torch & Mfg. Co., 237 E. 22d St., Erie, Pa.

Wall Mfg. Supply Co., P., 720 Preble Ave., Pittsburgh, Pa.

Walters—See Quadriga Mfg. Co.

TOTE BOXES—See Boxes, Sheet Metal

TOURING BASKETS—See Hampers, Touring

TOURING TENTS—See Tents, Touring

TOW BARS—See Ropes, Chains and Bars, Tow

TOW CHAINS—See Ropes, Chains and Bars, Tow

TOW HOOKS—See Hooks, Safety Tow

TOW ROPE SHOCK ABSORBERS—See Springs, Tow Rope

TOW ROPE SPRINGS—See Springs, Tow Rope

TOW ROPES—See Ropes, Chains and Bars, Tow

TRACTOR AUTOMATIC QUICK STOP HITCHES — See Hitches, Automatic Quick Stop Tractor

TRACTOR SPARK ARRESTERS—See Arresters, Tractor Spark

TRACTORS—See Section I

TRAFFIC SIGNALS—See Signals, Direction Indicating or Traffic

TRAILER AXLES—See Axles, Special Trailer

TRAILER BRAKE EQUALIZERS—See Equalizers, Trailer Brake

TRAILER CONNECTIONS—See Couplers, Trailer

TRAILER CONNECTORS—See Connectors, Trailer

TRAILER COUPLERS—See Couplers, Trailer

TRAILERS, Automobile and Truck

A T C—See Automotive Trailer Corp.

Adams Trailer Corp., Garden City, N. Y.

American Truck & Trailer Corp., Stoddard Pl., Kankakee, Ill.

Arcadia Trailer Corp., 21 Murray St., Newark, N. Y. (See page 1005.)

Automotive Trailer Corp., Springfield, Ill. "A T C."

Auto Trailer Co., 1322 S. Central Ave., Los Angeles, Cal.

Auto-Kamp Equipment Co., 2008 Sheridan Ave., Saginaw, Mich.

B. M. P. C.—See B. P. Mfg. Co.

B. P. Mfg. Co., Anderson, Ind. "B. M. P. Co."

Behlen Trailer Co., Vine & 15th Sts., Cincinnati, O.

Bethlehem Motor Corp., 40 E. Walnut St., Allentown, Pa.

Bower Mfg. Co., Fowler, Ind.

Brown City Mfg. Co., Brown City, Mich.

Byron Engineering Works, Louisville, Ky. (See page 1003.)

Cleveland Trailer Mfg. Co., Urbana Rd. & Euclid Ave., Cleveland, O.

Continental Trailer Corp., 3625 Superior St., Detroit, Mich.

Cook Motors Corp., Kankakee, Ill.

Curtis Trailer Co., 413 W. Broadway, Minneapolis, Minn.

Defiance Carriage Co., Defiance, O.

Delker Co., George, Henderson, Ky.

Detroit Trailer Co., 27-37 Campau Ave., Detroit, Mich. (See page 1003.)

Diamond Carriage Co., W. 118th St. & Second Ave., Spokane, Wash.

E. & W. Mfg. Co., Oregon St., Milwaukee, Wis. (See page 297.)

Eagle Wagon Works, 45 S. Division St., Auburn, N. Y.

Economy Hoist & Body Co., 405 Lexington Ave., New York, N. Y. (Eastern Distributors for Highway Trailers.) (See page 527.)

Electric Wheel Co., 28th & Cedar Sts., Quincy, Ill.

Emerson-Brantingham Implement Co., S. Independence Ave., Rockford, Ill.

Feigelson, Alex., 545 Crockett St., Beaumont, Tex.

Fix Bros., 2832 John R St., Detroit, Mich.

Forsythe Mfg. Co., Third St. & Kentucky Ave., Joplin, Mo. "King Jack."

Fruehauf Trailer Co., Harper Ave. & D. T. R. R., Detroit, Mich.

General Woodwork Co., 1225-35 Budd St., Cincinnati, O. "Queen City."

Glen Wagon & Car Corporation, Cortland, N. Y.

Graves Co., L. C., Springboro, Pa.

Harper Buggy Co., Columbia City, Ind.

Heming Wagon Works, Meridian, Miss.

Hercules Buggy Co., Morton Ave., Evansville, Ind.

Hesse & Son Mfg. Co., Wm. G., Leavenworth, Kans.

Hewitt-Ludlow Auto Co., 901-51 Indiana St., San Francisco, Cal.

Hi-Speed—See Northway Trailercar Co.

Highway Trailer Co., Edgerton, Wis.

Holland Trailer Co., 2031 First St., Detroit, Mich.

Hoof Bros. Mfg. Co., Plato, Minn.

Hummer Auto Top Works, Tenth & Lincoln Sts., Chicago Heights, Ill.

Jackson—See Miles Mfg. Co.

King Jack—See Forsythe Mfg. Co.

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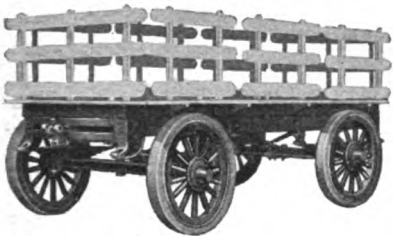
Byron Trailer



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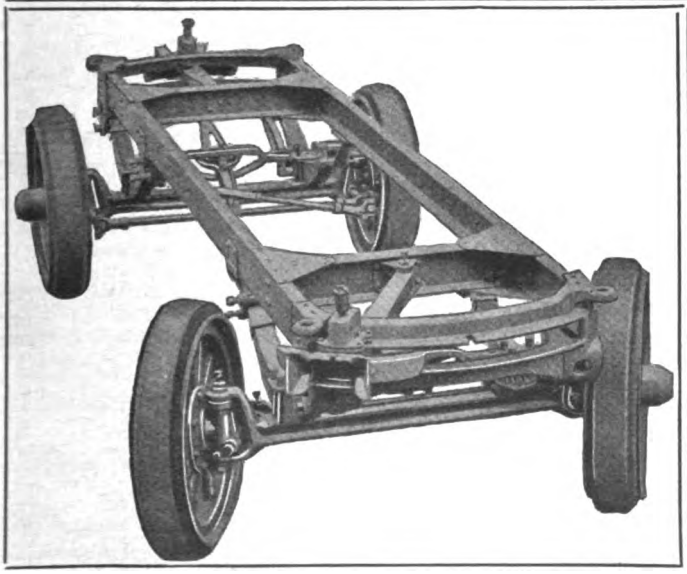
CANADIAN BRANCH DETROIT TRAILER CO. OF CANADA, WALKERVILLE, ONT.



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TRAILERS, Automobile and Truck (Continued)

King Trailer Co., 635 S. Main St., Ann Arbor, Mich.

Kleiber & Co., 11th & Folsom Sts., San Francisco, Cal.

Komfy-Kamping—See Maxi Trailer Co.

Lapeer Trailer Corp.—See Ryan, M. C.

Laura, John P., 40 S. Monroe St., Coldwater, Mich.

Lee Loader & Body Co., 2333 S. La Salle St., Chicago, Ill. (See page 1003.)

Lion Buggy Co., Cincinnati, O.

Litehaul—See Puffer-Hubbard Mfg. Co.

Los Angeles Trailer Co., 1328 Palmetto St., Los Angeles, Cal. "Utility."

Lowell Cutter Co., Lowell, Mich.

Lynch Mfg. Co., Hammond, Ind.

Lyons, F. P., 1008 Elm St., Manchester, N. H.

Martin-Parry Corp., W. Market St. & Highland Ave., York, Pa.

Martin Rocking Fifth Wheel Co., P. O. Box 1244 P., Springfield, Mass. (See page 1065.)

Martin Truck & Body Corp., E. Market St. & Highland Ave., York, Pa.

Marx, Geo. B., 192-206 Newell St., Brooklyn, N. Y.

Marx Trailer Co., 1145 Quincy St., Los Angeles, Cal. "Komfy Kamping."

Miami Trailer Co., 406 E. Market St., Troy, O.

Miles Mfg. Co., 351 S. Park St., Jackson, Mich. "Jackson."

Nepessing Mfg. Corp., Lapeer, Mich.

New Comer Co., D. A., 1125 Santa Fe Ave., Los Angeles, Cal.

Northway Trailercar Co., (East Rochester), Rochester, N. Y. "Hi-Speed."

Ohio Motor Vehicle Co., Oakview Ave. & Nottingham Rd., Cleveland, O.

Oklahoma Auto Mfg. Co., Okay, Okla.

Pacific Car & Foundry Co., Alaska Bldg., Seattle, Wash.

Page Bros. Buggy Co., Marshall, Mich.

Perfection Trailer & Mfg. Co., 1473 W. 110th St., Cleveland, O.

Pike Automobile & Trailer Co., 317 Central Ave., Los Angeles, Cal.

Puffer-Hubbard Mfg. Co., 26th St. & 32d Ave., S., Minneapolis, Minn. "Litehaul."

Queen City—See General Woodwork Co.

Ranger—See Southern Motor Mfg. Association.

Reedy Auto Truck & Trailer Co., 19 E. Archer St., Tulsa, Okla.

Reliance Trailer & Truck Co., 1642-64 Howard St., San Francisco, Cal.

Rogers Bros. Co., Albion, Pa.

Royal Machine Co., Cincinnati, O.

Ryan, M. C., 2307 S. Michigan Ave., Chicago, Ill. (Sole Distributors for Lapeer Trailer Corp., Lapeer, Mich.)

Samson Trailer Works, Grand Rapids, Mich. (See page 1005.)

Schaefer Wagon Co., Gustav, 4166-80 Lorain Ave., Cleveland, O.

Shadbolt Mfg. Co., 68 Flushing Ave., Brooklyn, N. Y.

Shaver Auto Trailer Co., E. Third & Locust Sts., Des Moines, Ia.

Simplex Short Turn Trailer Co., Lageo, Ind.

Southern Motor Mfg. Association, Beatty Bldg., Houston, Tex. "Ranger."

Springfield Commercial Body Co., 385 Liberty St., Springfield, Mass.

Standard Trailer Co., 162 Grant St., Cambridge Springs, Pa.

Stockbridge Body Co., 180 Union St., Springfield, Mass.

Syracuse Mfg. Co., Syracuse, Ind.

Texas Wagon Works, 4516 Harrisburg Blvd., Houston, Tex.

Timpte Bros., 2300 Walnut St., Denver, Colo.

Trailer Truck Co., Nashotah, Wis.

Trailmobile Co., 580 E. Fifth St., Cincinnati, O.

Troy Wagon Works Co., Troy, O.

Utility—See Los Angeles Trailer Co.

Victor Motor Truck & Trailer Co., 401 N. Hoyne Ave., Chicago, Ill.

W-A—See Whetstone & Co.

Warner Mfg. Co., 31 Main St., Beloit, Wis. (See page 1051.)

Watson Products Corp., Canastota, N. Y.

Wentworth & Irwin, 200 Second St., Portland, Ore.

Whetstone & Co., John H., Court St., Lapeer, Mich. "W-A."

Wolverine Truck-Trailer Co., 119-23 Greeley St., Detroit, Mich.

Zering Mfg. Co., H., 4437 Appleton St., Cincinnati, O.

TRANSFER PUMPS — See Pumps, Barrel Emptying

TRANSFERS, Decalcomania

Decalcomania Co., 20 W. Jackson Blvd., Chicago, Ill.

Globe Decalcomanie Co., 266 Sussex Ave., Newark, N. J. (See page 1005.)

Magnet—See Smith-Schiffin Co.

Meyercord Co., Chamber of Commerce Bldg., Chicago, Ill.

Motorists Accessories Co., Mansfield, O. (See page 1145.)

National Decalcomania Co., 240 N. 60th St., Philadelphia, Pa.

Palm Bros. Co., 71 Murray St., New York, N. Y.

Palm, Fechteler & Co., 67 Fifth Ave., New York, N. Y.

Smith-Schiffin Co., 149 Church St., New York, N. Y. "Magnet."

TRANSMISSION ASSEMBLY CLAMPS—See Clamps, Transmission Band Assembling

TRANSMISSION BAND ANTI-CHATTERERS—See Anti-Chatterers, Transmission Band for Fords

TRANSMISSION BAND LUGS FOR FORDS—See Lugs, Transmission Band

TRANSMISSION BAND SPRING COMPRESSING TOOLS FOR FORDS — See Tools, Transmission Band Spring Compressing

TRANSMISSION BANDING FOR FORDS—See Lining, Brake

TRANSMISSION BANDS FOR FORDS—See Bands, Transmission

TRANSMISSION BUSHING REAMERS FOR FORDS—See Reamers, Transmission Bushing

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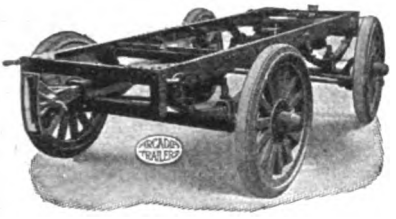

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TRANSMISSION DRUM HOLDERS FOR FORDS—See Holders or Stocks, Transmission Drum

TRANSMISSION DRUM REPAIRING CLAMPS FOR FORDS—See Clamps or Vises, Transmission Drum Repairing

TRANSMISSION DRUM REPAIRING VISES FOR FORDS — See Clamps or Vises, Transmission Drum Repairing

TRANSMISSION DRUM STOCKS FOR FORDS—See Holders or Stocks, Transmission Drum

TRANSMISSION FACINGS—See Lining, Brake

TRANSMISSION GEAR BUSHINGS—See Bushings, Bronze

TRANSMISSION GEARS—See Gears, Transmission

TRANSMISSION LOCKS — See Locks, Transmission

TRANSMISSION SHAFTS — See Shafts, Transmission

TRANSMISSIONS—See Gears, Transmission

TRANSMISSIONS, AUTOMATIC STARTER—See Gears, Automatic Starter Transmission

TRANSMISSIONS, TRACTOR—See Gears, Tractor Transmission

TRANSMITTING ATTACHMENTS—See Attachments, Power Transmitting

TREAD PEELING TOOLS—See Tools, Tire Tread Rolling and Peeling

TREAD ROLLING TOOLS—See Tools, Tire Tread Rolling and Peeling

TREAD STITCHING MACHINES — See Machines, Double Tread Tire Stitching

TREADS OR PROTECTORS, Detachable Tire

A D-O N-A-Tire—See Miller Rubber Co.

A. S. B.—See Queen Mfg. Co.

Brictson Mfg. Co., 14th & Farnum Sts., Omaha, Neb.

Bukolt Mfg. Co., Third St., Stevens Point, Wis. "Highway."

Cummings Traction Tire, 1704 Commonwealth Ave., Boston, Mass.

Durable—See Gates Rubber Co.

Ever Last Tread Co., 128 E. New York St., Indianapolis, Ind.

Gates Rubber Co., Broadway & Tennessee St., Denver, Colo. "Durable."

Givens Consolidated Rubber Co., Second & Howard Sts., San Francisco, Cal.

Highway—See Bukolt Mfg. Co.

Illinois Tire Co., First Nat'l Bank Bldg., Chicago, Ill.

Kimball Tire Case Co., 163 Broadway, Council Bluffs, Ia.

Lion—See Loewenthal Co.

Loewenthal Co., 947 W. 20th St., Chicago, Ill. "Lion."

Maplebay Mfg. Co., Crookston, Minn.

Miller, Chas. E., 1400 S. Meridian St., Anderson, Ind.

Miller Rubber Co., Akron, O. "A-D-O-N-A Tire." (See page 979.)

Pacific—See Sturges Tire & Rubber Co.

Queen Mfg. Co., Webster City, Ia. "A. S. B."

Savold Tire Co., 5 Columbus Circle, New York, N. Y.

Sturges Tire & Rubber Co., Oakland, Cal. "Pacific." (See page 647.)

Taylor Mfg. Co., 40 W. North St., Indianapolis, Ind.

Triple Tread Tire Co., 1442 Michigan Ave., Chicago, Ill.

Wearproof Tire Products Co., 554 Van Ness Ave., San Francisco, Cal.

TREATING COMPOUNDS—See Compounds, Gasoline Treating

TREATING, Heat

Alco Steel Co., Lincoln, N. J.

American Forge & Machine Co., 1650 Barth Ave., Canton, O. (See page 439.)

American Metal Treatment Co., Elizabeth, N. J. (See page 1007.)

Beeman & Broughton Co., 454-58 21st St., Detroit, Mich.

Bidle Co., W. S., 1411 E. 45th St., Cleveland, O.

Brooklyn Steel Treating Corp., 8-10 Franklin St., Brooklyn, N. Y.

Detroit Heat Treating Co., 1701 Bellevue Ave., Detroit, Mich.

Dittmer Gear & Mfg. Corp., 290 Grand St., Lockport, N. Y.

Frasse & Co., Peter A., 417-21 Canal St., New York, N. Y. (See page 279.)

General Railway Signal Co., Rochester, N. Y.

Hartford Machine Screw Co., Hartford, Conn. (See page 839.)

Ketler-Elliott Co., 3153 S. California Ave., Chicago, Ill.

Keyless Lock Co., 1401 Newman St., Indianapolis, Ind.

Meisel Press Mfg. Co., 945 Dorchester Ave., Boston, Mass. (See page 483.)

Milwaukee Heat Treating Co., 651-53 S. Pierce St., Milwaukee, Wis.

Montgomery Chemical Works, (Hamtramck), Detroit, Mich.

Myall-Wallace Co., 559-69 W. Lake St., Chicago, Ill.

Peninsular Milled Screw Co., 6910 E. Lafayette St., Detroit, Mich.

Sanford Mfg. Co., F. C., 2060 Fairfield Ave., Bridgeport, Conn.

Scott & Fitzer Machine Co., Locust Ave., Cleveland, O.

Snow Co., Fred. A., 1942 W. Kinzie St., Chicago, Ill.

Steel Improvement & Forge Co., 5003 Windsor Ave., Cleveland, O.

Turner Novelty Co., John C., Dayton, O.

Vincent Steel Process Co., 3131 Bellevue Ave., Detroit, Mich.

Wesley Steel Treating Co., 651-53 S. Pierce St., Milwaukee, Wis.

Williams & Co., J. H., 38 Richards St., Brooklyn, N. Y. (See page 1081.)

Wyman-Gordon, Worcester, Mass. (See Back Bone.)

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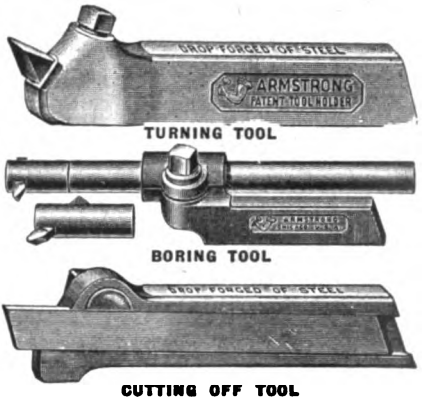

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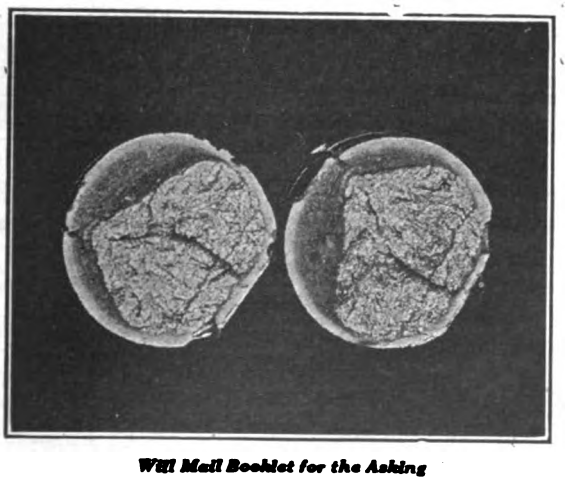

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TRESTLES AND TRUCKS—See Horses, Trestles and Trucks

TRIMMERS, BATTERY POST—See Tools, Storage Battery Repair

TRIMMERS' CLIPS—See Clips, Trimmers'

TRIMMERS' PASTE—See Paste, Trimmers'

TRIMMINGS, Cloth and Carpet

(See also Broadcloth, also Buttons; also Carpet; also Cloth; also Lace; also Linoleum; also Silk; also Whipcord)

Albrecht Co., H. E., 1834 Broadway, New York, N. Y.
Alf Co., Edward F., 420 E. Eighth St., Cincinnati, O.
Barrell Co. of New York, Wm. L., New York, N. Y. (See page 561.)
Bradford Fabrics Co., 1753-55 Broadway, New York, N. Y. (See page 675.)
Bridgeport Coach Lace Co., Bridgeport, Conn. (See page 167.)
Carr Co., F. S., 31 Beach St., Boston, Mass. "Carrcocloth."
Carrcocloth—See Carr Co.
Chase & Co., L. C., Boston, Mass. (See page 997.)
Duncan Co., W. H., 70-72 Worth St., New York, N. Y.
Dusenbury & Co., Louis, New York, N. Y. (See page 489.)
Galland, Wechmar & Co., 456 Fourth Ave., New York, N. Y.
Haarts, J. C., 10 High St., Boston, Mass.
Laidlaw Co., 16 W. 60th St., New York, N. Y. (See pages 253 and 617.)
Landers Bros. Co., Dept. A. 2, Toledo, O. (See page 605.)
Lounsbery & Sons, G. H., 107-09 W. Third St., Cincinnati, O.
Patterson & Greenough, 45 E. 17th St., New York, N. Y.
Roehm & Davison, 353 W. Woodbridge St., Detroit, Mich.
Scherer & Co., H., 440 E. Jefferson Ave., Detroit, Mich.
Schlegel Mfg. Co., 277 N. Goodman St., Rochester, N. Y.
Sherwood, A. S., 268 W. 54th St., New York, N. Y.
Shirley Corp., 250 W. 54th St., New York, N. Y. "Wearwell."
Sloane, W. & J., 575 Fifth Ave., New York, N. Y. (See pages 201, 561 and 579.)
Strong Textile Co., 245 W. 55th St., New York, N. Y. (See page 251.)
Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y.
Thurbis—See Thurnauer & Co.
Thurnauer & Co., J. C., 354 Fourth Ave., New York, N. Y. "Thurbis."
Tiel & Co., Geo., 1226 Race St., Philadelphia, Pa.
Warden Co., Geo. J., 6530-34 Carnegie Ave., Cleveland, O.
Wearwell—See Shirley Corp.
Wiese & Co., Wm., 234 W. 56th St., New York, N. Y.
Worumbo Co., 334 Fourth Ave., New York, N. Y.

TRIMMINGS, Metal

(See also Fasteners, Curtain; also Fittings, Top; also Forgings, Drop; also Handles, Door; also Hinges, Door; also Locks, Door; also Irons, Slat; also Irons, Body; also Mouldings, Brass; also Rests, Bow; also Separators, Bow)

Aetna Brass & Bronze Co., 1631-35 E. 55th St., Cleveland, O.
Amesbury Brass & Foundry Co., Amesbury, Mass.
Attwood Brass Works, Grand Rapids, Mich. (See page 1195.)
Cowles & Co., C., New Haven, Conn. (See page 651.)
Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.
E. V. B. Mfg. Co., 342 York St., New Haven, Conn.
English & Mersick Co., New Haven, Conn. (See pages 623 and 783.)
Enterprise Brass & Plating Co., Sixth & Baymiller Sts., Cincinnati, O.
Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)
Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.
Monarch Carriage Goods Co., Cincinnati, O. (See page 407.)
Phoenix Lock Works, 321-27 Third Ave., Newark, N. J.
Sherwood, A. S., 268 W. 54th St., New York, N. Y.
Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
Taylor Co., H. D., 99-115 Oak St., Buffalo, N. Y.
Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)
White Mfg. Co., 155 Cannon St., Bridgeport, Conn.
Wing Co., Charles, Amesbury, Mass. (See page 1173.)
Woodruff & Sons Co., Walter W., Mount Carmel, Conn.

TRIPLE GEAR RIVETING JIGS FOR FORDS—See Jigs, Triple Gear Riveting

TROUBLE CHARTS—See Charts, Electric Wiring

TROUBLE LIGHTS—See Lamps, Electric, Hand or Inspection

TRUCK ATTACHMENTS—See Converters, Chassis

TRUCK BODY GATE FASTENERS—See Fasteners, Truck Body Gate

TRUCK BODY HOISTS—See Hoists, Truck Body

TRUCK BODY SUPPORTS—See Supports, Truck Body

TRUCK CABS — See Cabs, Wood Truck; also Cabs, Metal Truck

TRUCK CONVERTERS—See Converters, Chassis

TRUCK CRANES—See Cranes, Truck

TRUCK GUARDS—See Fenders or Guards, Truck Radiator

TRUCK LOAD INDICATING METERS—See Meters, Truck Load Indicating

TRUCK LOADERS—See Loaders, Truck

TRUCK RIM APPLYING PRESSES—See Presses, Truck Rim Applying

TRUCK STAKE POCKETS—See Pockets, Truck Stake

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TRUCK UNITS—See Converters, Chassis

TRUCK WINCHES—See Winches, Truck

TRUCKS, Acetylene and Oxygen Tank

Dayton Display Fixture & Novelty Co., 712-14 E. Monument Ave., Dayton, O. "Presto."

Pioneer Welding Co., 610 E. Main St., Kalamazoo, Mich.

Presto—See Dayton Display Fixture & Novelty Co.

TRUCKS, Body Handling

Equipment Mfg. Co., Warren, O. "Farmington."

Farmington—See Equipment Mfg. Co.

Globe Vise & Truck Co., 1451 Front Ave. N. W., Grand Rapids, Mich.

TRUCKS, CASTORS and SPARE WHEELS, Wrecking

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Bihler, Albert E., 2219 Howard St., Omaha, Neb.

Compo Mfg. Co., Defiance, O.

Continental Auto Parts Co., 1807 E. 17th St., Columbus, Ind. (See page 419.)

Echo Motor Co., Tonawanda, N. Y.

Guss Co., O. G., Delphos, O.

Holmes & Bros., Robt., 30 N. Hazel Ave., Danville, Ill.

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Simplicity Products Mfg. Co., Milwaukee, Wis.).

Lawson—See Menasha Wood Split Pulley Co.

Masco—See Milwaukee Auto Specialty Co.

Menasha Wood Split Pulley Co., 674 Tayco St., Menasha, Wis. "Lawson."

Mid-West Mfg. Co., McKnight Bldg., Minneapolis, Minn. "Red Devil."

Milwaukee Auto Specialty Mfg. Co., 705-15 Chestnut St., Milwaukee, Wis. "Masco."

Mosher Mfg. Co., 12 E. 57th St., Chicago, Ill.

Projecta Co., East Milton, Mass.

Red Devil—See Mid-West Mfg. Co.

Simplicity Products Mfg. Co.—See Jonas C. N. & F. W.

Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 735.)

TRUCKS, GARAGE WHEEL—See Castors and Wheel Trucks

TRUCKS, OXYGEN TANK—See Trucks, Acetylene and Oxygen Tank

TRUCKS, Repair

(For lying on when making repairs underneath a car)

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for Foster Trucks.) (See page 275.)

Badger Mfg. Corp., Milwaukee, Wis. (See page 173.)

Banner Accessory Mfg. Co., St. Louis, Mo. (See page 601.)

Boyle Mfg. Co., Los Angeles, Cal. (See page 1189.)

Brocksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.

Chattanooga Wheelbarrow Co., 1221 E. Main St., Chattanooga, Tenn.

Continental Auto Parts Co., 1807 E. 17th St., Columbus, Ind. (See page 419.)

E-Z—See Wagner Mfg. Co.

Faw, J. H., 27 Warren St., New York, N. Y. "Fawsco." (See page 241.)

Fawsco—See Faw, J. H.

Ferro Mfg. Co., 2011 Michigan Ave., Chicago, Ill. "Sturdy." (See page 1197.)

Foster Bros. Mfg. Co., 811 Broad St., Utica, N. Y.

French, F. A., Braddock Ave. & Guthrie St., Pittsburgh, Pa. "Getunder."

Gasco—See General Auto Specialty Co.

Gem—See Moeschl-Edwards Corrugating Co.

General Auto Specialty Co., 151 Berkeley St., Boston, Mass. "Gasco."

Getunder—See French, F. A.

Gray-Heath Co., 1440 S. Michigan Ave., Chicago, Ill. (See page 741.)

Ideal—See Lewis-Geer Mfg. Co.

International Metal Mfg. Co., Wayne Ave. & Berkley St., Philadelphia, Pa. "Yankee."

K & E—See Kund & Elben Mfg. Co.

Keystone Wire Matting Co., 607-09 Seventh St., Beaver Falls, Pa.

Kund & Elben Mfg. Co., 204-24 Warrington Ave., Pittsburgh, Pa. "K & E."

Lewis-Geer Mfg. Co., 800 Railroad St. Ypsilanti, Mich. "Ideal."

Masco—See Milwaukee Auto Specialty Co.

Milwaukee Auto Specialty Mfg. Co., 705-15 Chestnut St., Milwaukee, Wis. "Masco."

Moeschl-Edwards Corrugating Co., Eighth & Ninth Sts., Covington, Ky. "Gem."

Portland Garage Co., 49-51 Cross St., Portland, Me.

Springville Wood Specialty Co., Springville, N. Y.

Sturdy—See Ferro Mfg. Co.

Wagner Mfg. Co., Cedar Rapids, Ia. "E-Z."

W-A—See Whetstone & Co.

Whetstone & Co., John H., Court St., Lapeer, Mich. "W.-A."

Wisconsin Welding & Cutting Co., 550 E. Water St., Milwaukee, Wis. (See page 1153.)

Yankee—See International Metal Mfg. Co.

Zering Mfg. Co., H., 4437 Appleton St., Cincinnati, O.

TRUNK RACKS—See Racks, Trunk

TRUNK STRAPS—See Straps, Leather; also Straps, Web

TRUNKS, BOARD—See Trunks, Leather

TRUNKS, FABRIC—See Trunks, Leather

TRUNKS, Leather, Fabric and Board

Ajax Trunk & Sample Case Co., 420 W. 125th St., New York, N. Y.

Bailey-Fitwell Co., 1318 S. Grand Ave., Los Angeles, Cal. "Fitwell."

Belber Trunk & Bag Co., 1641 N. Hancock St., Philadelphia, Pa.

Berg Auto Trunk & Specialty Co., 400 Lafayette St., New York, N. Y.

Farmers Market Co., 711 Orange St., Wilmington, Del.

Fitwell—See Bailey-Fitwell Co.

Kamlee—See McKane-Lins Co.

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Kronauer & Co., Chas., 152 N. Desplaines St., Chicago, Ill.

Likly & Rockett Trunk Co., 1365 Euclid Ave., Cleveland, O.

McDonald, Alexander, 15 Beacon St., Boston, Mass.

McKane-Lins Co., Milwaukee, Wis. "Kamlee." (See page 1013.)

Sage's Trunk & Leather Goods Co., 10 Washington St., N., Boston, Mass.

Simon & Co., S. C., 325 N. Second St., Philadelphia, Pa.

Stallman, F. A., 57 E. Spring St., Columbus, O.

Taylor Trunk Works, C. A., 673 N. Halsted St., Chicago, Ill.

Tuttle & Clark, 33 E. Jefferson St., Detroit, Mich.

United Auto Trunk Co., W. 26th St., New York, N. Y.

Winship, W. W., 71 Summer St., Boston, Mass.

TRUNKS, Metal

Warnock & Co., Wm., Sioux City, Ia.

TRUNKS, TIRE—See Trunks, Leather; also Trunks, Metal

TRUSS RODS FOR FORDS—See Rods, Rear Axle Truss

TRUSSES, REAR AXLE, FOR FORDS—See Rods, Rear Axle Truss

TUBE BAGS—See Covers, Spare Tire

TUBE CASES—See Covers, Spare Tire

TUBE DEFLATORS—See Machine, Tube Deflating and Valve Removing

TUBE EXPANDERS—See Expanders, Boiler

TUBE MANDRELS—See Mandrels, Inner Tube

TUBE PATCHES—See Patches, Tire Repair

TUBE PATCHING BUFFERS—See Buffers, Tube Patching

TUBE SPLICING MANDREL CLAMPS—See Clamps, Tube Splicing Mandrel

TUBE TESTING TANKS—See Tanks, Inner Tube Testing

TUBE VALVES, OIL FOR FORDS—See Valves, Oil Tube

TUBES, Inner

(For Outer Casings or Shoes—See Tires, Pneumatic)

Achilles Rubber & Tire Co., Binghamton, N. Y.

Acme Rubber Mfg. Co., Trenton, N. J.

Air Container Co., 40 Court St., Boston, Mass.

Ajax Rubber Co., 220 W. 57th St., New York, N. Y. (See page 1009.)

Allen Tire & Rubber Co., 510 Hamilton St., Allentown, Pa.

Allsteel Ridewell Tire & Rubber Co., Lindsey Bldg., Dayton, O. "Artyr."

Amazon Rubber Co., Akron, O.

American—See Mansfield Tire & Rubber Co.

American Auto Accessories Co., 332 S. Michigan Ave., Chicago, Ill. "Brown."

American Rubber & Tire Co., 100 Beech St., Akron, O.

Anchor—See New Jersey Car Spring & Rubber Co.

Arabian—See Defiance Tire Factories.

Archer Cord Tire & Rubber Co., 711-17 1st Ave., N. E., Minneapolis, Minn.

Armstrong Rubber Co., Garfield, N. J.

Artyr—See Allsteel Ridewell Tire & Rubber Co.

Auto-Seal—See Shaw Tire Co.

Auto Tire Sales Co., 1346-48 Michigan Ave., Chicago, Ill. "Lyon." (See page 143.)

Axiom—See Surety Tire & Rubber Co.

Batavia Rubber Co., Batavia, N. Y.

Beacon Tire Co., Main & River Sts., Beacon, N. Y.

Bergen Rubber Co., 40-42 Paterson Ave., East Rutherford, N. J.

Bergougnan Rubber Corp., 2000 E. State St., Trenton, N. J.

Best—See Veghte, Harry V.

Biltwell Tire & Rubber Co., Akron, O.

Black Hawk Tire & Rubber Co., Des Moines, Iowa.

Black Stripe—See Rubber Products Corp.

Blekre Tire & Rubber Co., St. Paul, Minn. (See page 1189.)

Boska—See Standard Tire Filler Co.

Bowers Rubber Works, 68-70 Sacramento St., San Francisco, Cal.

Bowling Green Rubber Co., 1202 Prospect Ave., Toledo, O.

Braender Rubber & Tire Co., Rutherford, N. J. (See page 1207.)

Brown—See American Auto Accessories Co.

Brunswick-Balke-Collender Co., 623 S. Wabash Ave., Chicago, Ill. (See page 1171.)

Buckskin—See Tuscan Tire & Rubber Co.

Bucyrus—See Henderson Tire & Rubber Co.

Burdick Tire & Rubber Co., Noblesville, Ind.

C C C—See Canton Rubber Works.

Canton Rubber Works, 209 Washington St., Canton, Mass. "C C C."

Capitol—See National Tire & Rubber Co.

Carlisle Tire & Rubber Co., Carlisle, Pa. "Carmojon."

Carmojon—See Carlisle Tire & Rubber Co.

Carspring—See New Jersey Car Spring & Rubber Co.

Century-Plainfield Tire Co., Plainfield, N. J.

Century Rubber Works, 1346 Rawson St., Chicago, Ill.

Champion—See McLean Tire & Rubber Co.

Channon Co., H., 150 N. Market St., Chicago, Ill. "Gripwell."

Chester Rubber Tire & Tube Co., Chester, Va.

Chicago Rubber Clothing Co., 1501 Albert St., Racine, Wis. "O'Claire."

Climax—See Zee-Zee Rubber Co.

Climax Rubber Co., Citizens Bank Bldg., Columbus, O. (See page 1011.)

Clingstone—See Lancaster Tire & Rubber Co.

Coast Tire & Rubber Co., 48th Ave. & E. St., Oakland, Cal.

Columbia Tire & Rubber Co., Elm & Railroad St., Columbiana, O. "Para-Bell."

Columbus Tire & Rubber Co., 555 W. Goodale St., Columbus, O.

Combination Rubber Mfg. Co., Bloomfield, N. J. "Eagle."

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Rain-Proof—Rust-Proof—Dust-Proof

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Trunks Made for all Cars

We specialize on Marmon, Cadillac, Pierce-Arrow, Packard, Franklin

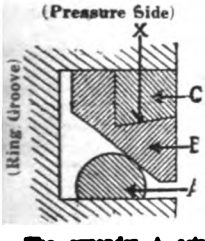
Manufactured by

McKANE-LINS CO., Milwaukee, Wisconsin

Dealers Write for Discount

PRESSURE PROOF PISTON RINGS

Service Station and Repairmen are finding in Pressure Proof Piston Rings one of the few dependable means of preventing Carbon and Smoke; Increasing Power and Saving Oil and Gas.



The expander A acts on the bevel of ring B, pressing it outward against cylinder wall, and upward against pressure side of ring groove. The small ring C is slightly beveled at the point X, to lock it into the main ring. This locks the two rings together.

The principle on which these rings operate (illustrated below) is mechanically correct—their ability to accomplish all that we claim for them is backed by years of performance unequaled by any other piston ring. "New Facts About Piston Rings" tells you why.

***One* Pressure Proof 3-piece or *Two* Pressure Proof 2-Piece rings are a full piston equipment.**

Pat. Mar. 2, 1915. Feb. 29, 1916

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Distributors for Lower Peninsula of Michigan—Chas. R. Manes, 1141 Jefferson Ave. E., Detroit, Mich.

CANADIAN FACTORY—Pressure Proof Rings, Ltd., Sun Life Bldg., Sherbrooke, Que.

Distributors for South Carolina — Gibbes Machinery Co., Wheat and Assembly Sts., Columbia, S. C.

Distributor for California—Mr. John Amois, 596 Golden Gate Ave., San Francisco, Cal.

PRESSURE PROOF PISTON RING CO., 107 Mass. Ave., Boston, Mass.

QUALITY

CORD TIRES

RED & GREY TUBES

The

MALAY RUBBER CO.

Executive Offices **1035 Guardian Building** **Cleveland, Ohio**

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TUBES, Inner (Continued)

Compression Tube & Tire Corp., 318 W. 39th St., New York, N. Y.
Conestoga Tire & Rubber Co., 46 N. Prince St., Lancaster, Pa., (See page 883.)
Congo—See Corona Cord Tire Co.
Continental Rubber Works, 1902 Liberty St., Erie, Pa. "Vitalic."
Converse Rubber Shoe Co., Malden, Mass. "Tuff-E-Nuff."
Corduroy—See Grand Rapids Tire & Rubber Corp.
Corona Cord Tire Co. (E. Butler), Butler, Pa. "Congo."
Corona Rubber Mfg. Co., Rittenhouse & Osceola Sts., Philadelphia, Pa.
Cortland Tire & Rubber Co., 242 Cortland St., Belleville, N. J.
Crown Tire & Rubber Co., Ralston, Neb.
Cumberland Tire & Rubber Co., 26th & Courtney Sts., Louisville, Ky.
Cupples Co., Seventh & Spruce Sts., St. Louis, Mo. "Rhinos."
Dayton Rubber Mfg. Co. of N. Y., 227 W. 57th St., New York, N. Y. (Sole Distributors for Dayton Rubber Mfg. Co., Dayton, O.)
Daytona Rubber Mfg. Co.—See Daytona Rubber Mfg. Co. of N. Y.
Defiance Tire Factories, 426 Randolph St., Chicago, Ill. "Arabian."
Delion Tire & Rubber Co., Baltimore, Md. (See page 1015.)
De Luxe—See Thermoid Rubber Co.
Diamond Holdfast Rubber Co., 33 Auburn Ave., Atlanta, Ga.
Diamond Rubber Co., Akron, O.
Doss Rubber & Tube Co., Murphy Ave., Atlanta, Ga.
Double Fabric Tire Co., 60 W. Ninth St., Auburn, Ind.
Dowse Rubber Co., 122 S. Michigan Ave., Chicago, Ill.
Dry Climate Tire Mfg. Co., Arvada, Colo. "Vadacol."
Dryden Rubber Co., 1014 S. Kildare St., Chicago, Ill.
Dunlop Tire & Rubber Corp. of America, Buffalo, N. Y. (See page 1137.)
Dural Rubber Corp., Maple Ave., Flemington, N. J.
Eagle—See Combination Rubber Mfg. Co.
Eagle Rubber Co., Bloomfield, N. J.
Eckolastic—See Eckrode Rubber Co.
Eckrode Rubber Co., 118 Adams St., Newark, N. J. "Eckolastic."
Economy Rubber Co., Johnstown Trust Bldg., Akron, O.
Ehman Tire & Rubber Co., 176 N. Michigan Ave., Chicago, Ill.
Empire Rubber & Tire Co., Mulberry St. & Clinton Ave., Trenton, N. J.
Erie Tire & Rubber Co., First St., Sandusky, O.
Essex Rubber Co., May & Bleakes Sts., Trenton, N. J.
Eternal—See Midland Tire & Rubber Co.
Eureka Tire Co., Broad St. Bank Bldg., Trenton, N. J.
Evergreen—See Falls Rubber Co.
Excel Rubber Co., Wadsworth, O. "X-L."
Falls Rubber Co., Cuyahoga Falls, O. "Evergreen."
Federal Rubber Co. (Cudahy), Milwaukee, Wis.
Firestone Tire & Rubber Co., Miller & Sweitzer Aves., Akron, O.
Fisk Rubber Co. of New York, Chicopee Falls, Mass. (See page 1015.)
Forster Tire & Rubber Co., Millersburg, O.
Fort Wayne Tire & Rubber Mfg. Co., Peoples Trust Bldg., Fort Wayne, Ind. "Wayne."
G & J Tire Co., Indianapolis, Ind.
Gates Rubber Co., Broadway & Tennessee St., Denver, Colo. "Vulco."
General Tire & Rubber Co., 330 N. 15th St., Philadelphia, Pa.
General Tire & Rubber Co., E. Market St., Akron, O.
Gillette Rubber Co., Eau Claire, Wis.
Glamorgan Tire & Rubber Corp., 72 E. Spring St., Columbus, O.
Globe Rubber Tire Mfg. Co., 1851 Broadway, New York, N. Y. (See page 979.)
Goodrich Co., B. F., S. Main St., Akron, O.
Goodyear Tire & Rubber Co., Akron, O. (See page 1015.)
Gordon Tire & Rubber Co., 1200 Seventh St. S. W., Canton, O.
Grand Rapids Tire & Rubber Corp., Pearl & Ottawa Sts., Grand Rapids, Mich. "Corduroy."
Great Republic Tire & Rubber Mfg. Co., Equity Bldg., Muskogee, Okla. "Sequayale."
Greensburg Tire & Rubber Co., 700 W. Otterman St., Greensburg, Pa. "Isbest," "Pyramid," "Red Wing," "Silver Grey."
Greyhound—See Ideal Tire & Rubber Co.
Gripwell—See Channon Co.
Guage Valve Corp., 217-37 Lake Erie St., Rochester, Ind.
Hamilton Rubber Mfg. Co., Mead & Prince Sts., Trenton, N. J.
Handy—See United States Leatheroid & Rubber Co.
Hanes Rubber Co., Winston-Salem, N. C.
Hardman Rubber Corp., New Brunswick, N. J. "Stanwood."
Hartford Rubber Co., 1790 Broadway, New York, N. Y.
Hartford Rubber Works Co., Hartford, Conn.
Hawkeye Tire & Rubber Co., 215 E. Third St., Des Moines, Ia.
Haywood—See Zee-Zee Rubber Co.
Henderson Tire & Rubber Co., 23-31 W. 43d St., New York, N. Y. "Bucyrus." (See page 973.)
Hercules Rubber Corp., Union Central Life Bldg., Cincinnati, O.
Hewitt Rubber Co., 240 Kensington Ave., Buffalo, N. Y.
Highway—See National Tire & Rubber Co.
Home Tire Co., Trenton, N. J.
Hood Rubber Products Co., Watertown, Mass. (See pages 969 and 970.)
Horseshoe—See Racine Auto Tire Co.
Howe Rubber Co., Codwise Ave., New Brunswick, N. J.
Ideal—See Voorhees Rubber Mfg. Co.
Ideal Tire & Rubber Co., 1615 Euclid Ave., Cleveland, O. "Greyhound."
Independent Airless Tire Co., Cottage & Pacific Sts., Independence, Mo.
India Tire & Rubber Co., Akron, O.
Inland Rubber Co., 146 W. 27th St., Chicago, Ill.
International India Rubber Corp., Ewing Ave. & Vandalia R. R., South Bend, Ind. "South Bend."
Iowa Cord Tire Co., Fleming Bldg., Des Moines, Ia.
Isbest—See Greensburg Tire & Rubber Co.
Jasper Tire & Rubber Co., 320 Main St., Jasper, Ind.
Johnstone Tire & Rubber Co., La Porte, Ind.
Jordan Tire & Rubber Co., Mallers Bldg., Chicago, Ill.
K & W Rubber Co., 55-65 Channing St., Delaware, O.
KelBro—See Kelley Tire Co.
Kelley Tire Co., Drexel Bldg., Philadelphia, Pa. "KelBro."

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Delion dealers have few competitors.

Delion distinctive features set them out from the masses.

The most profitable line you can sell.

Write at once—your territory may still be open.

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Baltimore, Md.
Personal Sales Help. Direct Advertising.

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FISK F TRADE MARK

Are Full Of Brute Strength

Goodyear Tire and Rubber Co.
AKRON OHIO

Manufacturers of

CORD AND FABRIC
Passenger Car Tires
and Solid, Cushion and
Pneumatic Truck Tires

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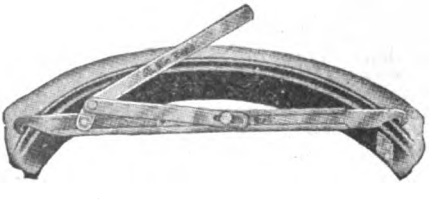

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Push and Pull Rim Tool

Since the adoption of the split rim motorists have been looking for this tool.

The THIEM Rim Tool REMOVES THE RIM FROM THE TIRE—not the tire from the rim.

Requires but a few seconds in the entire operation.

A simple one-screw adjustment makes the THIEM Rim Tool fit any size split rim, thus making only one tool necessary for you to handle.

The THIEM Rim Tool exerts a leverage of 9 to 1, or in other words, 100 pounds on the lever exerts 900 pounds at the rim, push or pull, amply sufficient to pull an old or rusty rim away from the tire.

Sells at $3.50 with a liberal profit to the trade.

METAL PRODUCTS MFG. CO.
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TUBES, Inner (Continued)

Kelley Tire & Rubber Co., West Haven, Conn.

Kenyon Co., C., 754 Pacific St., Brooklyn, N. Y. (See page 760.)

Keystone Rubber Mfg. Co., 135 E. 11th St., Erie, Pa. "Moomey."

Keystone Tire & Rubber Co., Keystone Bldg., New York, N. Y. (See page 967.)

Knox Tire & Rubber Co., Mt. Vernon, O.

Knabenshue Mfg. Co., East Northport, N. Y.

Kokomo Rubber Co., 1042 S. Main St., Kokomo, Ind.

Lancaster Tire & Rubber Co., Long & Fourth Sts., Columbus, O. "Clingstone."

Last-Wel—See Twin Tube & Rubber Co.

Latex Tire & Rubber Co., E. Scott St., Fond du Lac, Wis.

Lee Tire & Rubber Co., 245 W. 55th St., New York, N. Y. "Velvet."

Lehigh Tire & Rubber Co., Newcastle, Pa.

Liberty Tire & Rubber Co., Green Bay, Wis.

Lion Tire & Rubber Corp., E. Union Street, Lafayette, Ind. "Lioness."

Lioness—See Lion Tire & Rubber Corp.

London Rubber Co., 906 Forbes St., Pittsburgh, Pa. "Red Devil."

Lincoln Highway Tire Co., Fulton, Ill. (See page 1185.)

Lotex Tire & Rubber Co., Fond du Lac, Wis.

Lyon—See Auto Tire Sales Co.

M S—See Middle States Rubber Co.

McCreary Tire & Rubber Co., 15th & School Sts., Indiana, Pa.

McGraw Tire & Rubber Co., Euclid Bldg., Cleveland, O.

McLean Tire & Rubber Co., East Liverpool, O. "Champion."

Majestic Tire & Rubber Co., Cruse & Daly Sts., Indianapolis, Ind.

Malay Rubber Co., 1035 Guardian Bldg., Cleveland, O. (See page 1013.)

Malco Tire & Rubber Co., 30th & Chestnut Sts., Philadelphia, Pa. (See page 1181.)

Mansfield Tire & Rubber Co., Newman St., Mansfield, O. "American," "United," "Ohio."

Marathon Tire & Rubber Co., Cuyahoga Falls, O.

March—See Malickson & Co.

Marion Tire & Rubber Co., George & Grand Sts., Marion O.

Martin, James, 130-34 W. 52nd St., New York, N. Y. (Dealer.) (See page 629.)

Mason Tire & Rubber Co., 302 Lake St., Kent, O.

Meyer Rubber Co., Columbiana, O.

Michelin Tire Co., Milltown, N. J.

Midco—See Zenith Tire & Rubber Co.

Middle States Rubber Co., Painesville, O. "M. S."

Middletown Rubber Co., 80-84 Washington St., Middletown, N. Y.

Midland Tire & Rubber Co., Cambridge Rd., Coshocton, O. "Eternal," "Rainbow."

Miller, Chas. E., 1400 S. Meridian St., Anderson, Ind.

Miller Rubber Co., Akron, O. (See page 979.)

Mississippi Valley Rubber Co., Iowa City, Ia.

Mohawk Rubber Co., E. Market St., Akron, O.

Monarch—See Perfection Tube Co.

Montford Rubber Co., 354 Main St., Buffalo, N. Y. "Red Racer."

Moomey—See Keystone Rubber Mfg. Co.

Mutual Tire & Rubber Co., 9 E. 40th St., New York, N. Y.

Naco—See National Motor Accessories Corp.

Nassau—See Thermoid Rubber Co.

National Rubber Products Corp., 660 N. Broad St., Philadelphia, Pa.

National Tire Co., Trenton, N. J.

National Tire & Rubber Co., East Palestine, O. "Capitol," "Highway," "Olympian," "Roamer," "Record."

Neverout—See Rose Mfg. Co.

New Jersey Car Spring & Rubber Co., Wayne & Brunswick Sts., Jersey City, N. J. "Car-spring." "Anchor."

Norwalk Tire & Rubber Co. (Winnipauk), Norwalk, Conn.

O'Claire—See Chicago Rubber Clothing Co.

Ohio—See Mansfield Tire & Rubber Co.

Ohio Guaranty Tire & Rubber Co., 5510 Euclid Ave., Cleveland, O. (Sole Distributors for Western Reserve Tire Corp., Cleveland, O. "Reserve.") (See page 1101.)

Oldfield Tire Co., 2045 Euclid Ave., Cleveland, O.

Olympian—See National Tire & Rubber Co.

Overland Tire & Rubber Co., Omaha, Neb.

Palmer Tire & Rubber Co., St. Joseph, Mich.

Para-Bell—See Columbia Tire & Rubber Co.

Paramoid—See Pharis Tire & Rubber Co.

Peerless Puncture-Proof Tube Co., 3030 McGee Traffic Way, Kansas City, Mo.

Pennsylvania Rubber Co., Jeannette, Pa.

Perfection Tire & Rubber Co., Fort Madison, Iowa.

Perfection Tube Co., Painesville, O. "Monarch."

Perry Auto Lock Co., 2635 Michigan Ave., Chicago, Ill. (See page 593.)

Pharis Tire & Rubber Co., Newark, O. "Paramoid." (See page 1127.)

Plexus Tire & Rubber Co., Tacony, Pa. "Tuf."

Portage Rubber Co., Barberton, O.

Pyramid—See Greensburg Tire & Rubber Co.

Quaker City Rubber Co., 629 Market St., Philadelphia, Pa.

Quality Tire & Rubber Co., Anderson, Ind.

Racine Auto Tire Co., 1215 State St., Racine, Wis. "Horseshoe."

Rainbow—See Midland Tire & Rubber Co.

Racine Rubber Co., Asylum Ave., Racine, Wis.

Ramo Tire & Rubber Co., Standard Life Bldg., Pittsburgh, Pa.

Record—See National Tire & Rubber Co.

Red Devil—See London Rubber Co.

Red Racer—See Montford Rubber Co.

Red Wing—See Greensburg Tire & Rubber Co.

Reliance Tire & Rubber Corp., Manchester Ave., Keyport, N. J.

Republic Rubber Co., Albert St., Youngstown, Ohio.

Reserve—See Ohio Guaranty Tire & Rubber Co.

Rhinos—See Cupples Co.

Roamer—See National Tire & Rubber Co.

Rose Mfg. Co., 910 Arch St., Philadelphia, Pa. "Never-out." (See page 711.)

Rotary Tire & Rubber Co., Zanesville, O.

Rubber Co. of America, Hartford Bldg., Chicago, Ill. (Sole Distributors for Wilson Tire & Rubber Co., Springfield, Ill.)

Rubber Products Co., Barberton, O. "Stronghold."

Rubber Products Corp., Shelton, Conn. "Black Stripe."

S. H. Rubber Mfg. Co., 2397 Boulevard, Jersey City, N. J. "Winner."

Samson Tire & Rubber Corp., 333 W. Pico St., Los Angeles, Cal.

Savage—See Spreckels-Savage Tire Co.

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Rich Tool Company

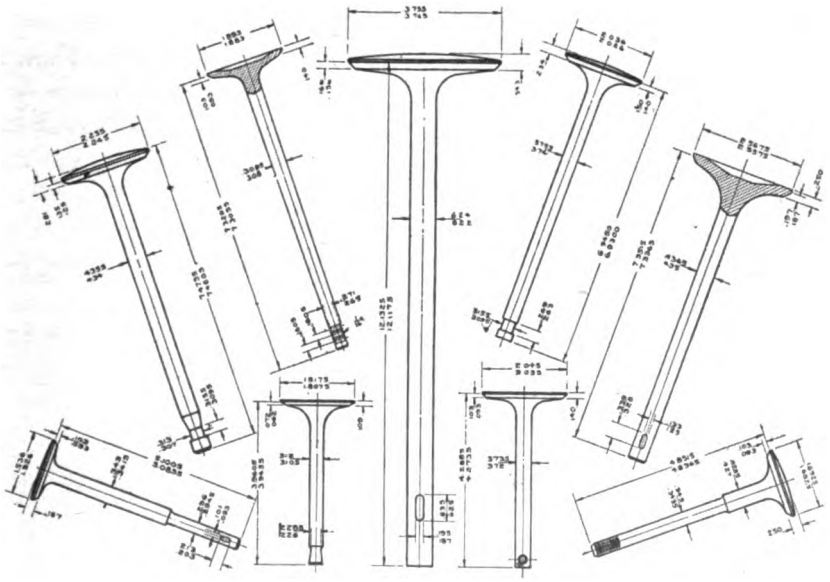
Railway Exchange Bldg., Chicago, Ill. **Kresge Building, Detroit, Mich.**

The cuts below represent valves used in some of the best known present day Aeroplane, Motor-Boat and Racing Automobile Engines. They are all products of this Company and most of them have been produced in large quantities and have, therefore, been thoroughly tested in service.

Needless to say, they are all Tungsten Steel, but we also make one-piece forged valves of all other commonly used Alloy Steels in the manufacture of which we exercise the same care as is used in our Tungsten Valve materials.

One of the newer types of valves which we have been making in very large quantities for the past two years is our Hi-Chromium Valve, which has some very remarkable properties. It is for some purposes an excellent valve and we solicit inquiries from those who are troubled by a persistent burning away of the seats of the valves in their motors.

We also have a material called Cobalt-Crom that possesses the qualities of High-Chromium as relates to resistance to burning, together with a resistance to abrasion or wear and a strength when red hot more nearly comparable to that of High-Tungsten. This material offers excellent promise of good results in engines running for long periods under heavy load without attention, such as marine motors and tractor motors.



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TUBES, Inner (Continued)

Schavoir Rubber Co., Lee St., Stamford, Conn.
Sealtite—See Victory Rubber Mfg. Co.
Security Tire & Rubber Co., Wellington, O.
Sedrala—See Semple Rubber Co.
Semco—See Semple Rubber Co.
Semple Rubber Co., 172 Murray St., Trenton, N. J. "Sedrala," "Semco."
Sequayale—See Great Republic Tire & Rubber Mfg. Co.
Service Rubber Co., 2615 Walnut St., Kansas City, Mo.
Shaw Tire Co., Old South Bldg., Boston, Mass. "Auto-Seal."
Sherman—Stievson Tire & Rubber Co., Elks Bldg., Scottdale, Pa.
Silver Grey—See Greensburg Tire & Rubber Co.
Sioux City Tire & Mfg. Co., Fifth & Plymouth Sts., Sioux City, Ia.
South Bend—See International India Rubber Corp.
Spencer Co., W. E., 1 Park Pl., New York, N. Y. "Vulpa."
Sprague Tire & Rubber Co., 18th & Ozard Sts., Omaha, Neb.
Spreckels-Savage Tire Co., Main & Sicard Sts., San Diego, Cal. "Savage."
Standard Four Tire Co., Dept. D., Keokuk, Ia. (See page 975.)
Standard Tire Co., Willoughby, O.
Standard Tire Filler Co., 1400 Broadway, New York, N. Y. "Boska."
Stanwood Rubber Co., 13 E. 47th St., New York, N. Y.
Stanwood—See Hardman Rubber Corp.
Star Rubber Co., 1072 Crozier St., Akron, O.
Sterling Tire Corp., Rutherford, N. J.
Stronghold—See Rubber Products Co.
Sturdy Tire & Rubber Co., Trenton, N. J.
Sturges Tire & Rubber Co., Oakland, Cal. "V. K." (See page 647.)
Surety Tire & Rubber Co., St. Louis, Mo. "Axiom." (See page 1001.)
Swinehart Tire & Rubber Co., North & Howard Sts., Akron, O.
Thermoid Rubber Co., Trenton, N. J. "De Luxe," "Nassau." (See page 543.)
Toliver Tube & Tire Co., 3100 Downing St., Denver, Colo.
Traveler Tire & Rubber Co. of Bethlehem, Traveler Ave. & Auburn St., Philadelphia, Pa.
Trent Rubber Co., 105-11 Enterprise St., Trenton, N. J. "Truco."
Triumph Tire & Rubber Co., 226 W. 56th St., New York, N. Y. (See page 1111.)
Tropical Tire & Rubber Co., 365 Broadway, New York, N. Y.
Truco—See Trent Rubber Co.
Tuf—See Plexus Tire & Rubber Co.
Tuff-E-Nuff—See Converse Rubber Shoe Co.
Tulsa—See U. S. Compression Inner Tube Co.
Tuscan Tire & Rubber Co., Carrollton, O. "Buckskin."
Twin Tube & Rubber Co., 1002 S. Michigan Ave., Chicago, Ill. "Last-Wel."
Tyer Rubber Co., Andover, Mass. "Tyrian."
Tyrian—See Tyer Rubber Co.
U. S. Compression Inner Tube Co., Tulsa, Okla. "Tulsa."
United—See Mansfield Tire & Rubber Co.
United States Leatheroid & Rubber Co., Lowell St., Reading, Mass. "Handy."
United States Tire Co., 1790 Broadway, New York, N. Y.
United & Globe Rubber Co., Prospect & Frazier Sts., Trenton, N. J.
Universal Rubber Products Co., Zellenople, Pa.
V. K.—See Sturges Tire & Rubber Co.
Vadacol—See Dry Climate Tire Mfg. Co.
Veghte, Harry V., 799 Seventh Ave., New York, N. Y. "Best." (See page 1101.)
Velvet—See Lee Tire & Rubber Co.
Victor Rubber Co., Springfield, O. (See page 971.)
Victory Rubber Mfg. Co., 259 Peachtree St. Atlanta, Ga. "Sealtite."
Victory Tire & Rubber Co., Asbury Park, N. J.
Viking—See Voorhees Rubber Mfg. Co.
Vitalic—See Continental Rubber Works.
Voorhees Rubber Mfg. Co., 20-56 Bostwick Ave., Jersey City, N. J. "Viking," "Ideal."
Vulcan Rubber Co., Erie, Pa.
Vulco—See Gates Rubber Co.
Vulcweld Tire & Rubber Co., Pottstown, Pa.
Vulpa—See Spencer Co.
Wayne—See Fort Wayne Tire & Rubber Mfg. Co.
Western Reserve Tire Corp.—See Ohio Guaranty Tire & Rubber Co.
Wilson Tire & Rubber Co.—See Rubber Co. of America.
Winner—See S. H. Rubber Mfg. Co.
Wyoming Tire & Rubber Co., 814-16 Coal Exchange Bldg., Wilkes-Barre, Pa. (See page 1181.)
X-L—See Excel Rubber Co.
Yale Tire & Rubber Co., 1003 Dixwell Ave. New Haven, Conn.
Zee-Zee Rubber Co., Yardville, N. J. "Haywood," "Climax."
Zenith Tire & Rubber Co., Leader-News Bldg. Cleveland, O. "Midco."

TUBES, MICA—See Mica

TUBES, Non-Explosive Tank Filling

Kessler—See Non-Explosive Can & Tube Co.
Non-Explosive Can & Tube Co., 127-29 S Green St., Chicago, Ill. "Kessler."

TUBES, PORCELAIN—See Porcelain

TUBES, Speaking

(For Limousine Telephones—See Telephones, Limousine; for Annunciators—See Annunciators)

Bridgeport Coach Lace Co., Bridgeport, Conn
Cowles & Co., C., New Haven, Conn. (See page 651.)
English & Mersick Co., New Haven, Conn. (See pages 623 and 783.)
Norwalk Mfg. Co. (East Norwalk), Norwalk, Conn.
Schlegel Mfg. Co., 277 N. Goodman St. Rochester, N. Y.
Taylor Co., H. D., 99-115 Oak St., Buffalo, N. Y.

TUBING, Aluminum

Aluminum Co. of America, Oliver Bldg. Pittsburgh, Pa.
Ivins Tube Works, Ellwood, Oak Lane Station, Philadelphia, Pa.

TUBING, Brass and Copper

American Brass Co. (Kenosha Branch), Kenosha, Wis.
American Brass Co., Waterbury, Conn. (See page 165.)

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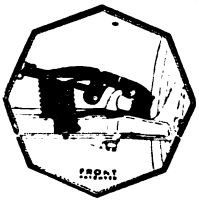

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TUBING, Brass and Copper (Cont'd)

Baltimore Tube Co., Ostend & Wicomico Sts., Baltimore, Md.

Bridgeport Brass Co., Bridgeport, Conn. (See page 907.)

Chase Rolling Mill Co., Grand St., Waterburg, Conn.

Claussen Tube Works, J. H., 25 Day St., Brooklyn, N. Y.

Continuous Rolling Mills of the Continuous Casting Corp., Garwood, N. J.

Cornelis & Gridley, Wolcott St., Waterbury, Conn.

Dallas Brass & Copper Co., Chicago, Ill. (See page 167.)

Detroit Copper & Brass Rolling Mills, Clark Ave. below Wabash R. R., Detroit, Mich.

Erie-Buffalo Tube Co., 18th & Cranberry Sts., Erie, Pa.

Freeman Brass Works, 92 Bowery, New York, N. Y.

French Mfg. Co., 142 Robbins St., Waterbury, Conn.

Mackenzie-Walton Co., Pawtucket, R. I.

Michigan Copper & Brass Co., 5851 W. Jefferson Ave., Detroit, Mich. "Wolverine."

Michigan Tube Co., 676 W. Grand Blvd., Detroit, Mich.

Mohican Brass & Copper Works, 107 Liberty St., New York, N. Y.

National Brass & Copper Tube Co., 41 Park Row, New York, N. Y.

National Co., 57 N. Main St., Waterbury, Conn.

National Copper Smelting Co., 1839 Coltman Rd., Cleveland, O.

New Jersey Tube Co., Kingsland Ave., Harrison, N. J.

Randolph-Clowes Co., 384 Bank St., Waterbury, Conn.

Roberts Tube Works, 2500 Military Ave., Detroit, Mich.

Rome Brass & Copper Co., E. Dominick St., Rome, N. Y.

Rome Hollow Wire & Tube Co., Railroad St., Rome, N. Y.

Standard Brass & Copper Tube Co., Woodbridge & Division Sts., New London, Conn.

Standard Metalwork Co., Thompsonville, Conn.

Uniform Seamless Wire Co., 71 Peck St., Providence, R. I.

United Wire & Supply Co., 1497 Elmwood Ave., Providence, R. I.

Waterbury Mfg. Co., 236 Grand St., Waterbury, Conn.

Wells & Co., A. H., 561 Watertown Ave., Waterbury, Conn.

Wolverine—See Michigan Copper & Brass Co.

Wolverine Tube Co., Detroit, Mich. (See page 1021.)

TUBING, BRASS IRON-LINED—See Tubing, Iron-Lined

TUBING CONNECTIONS — See Unions, Tubing

TUBING, COPPER—See Tubing, Brass and Copper

TUBING, FIBRE—See Fibre, Hard

TUBING, FLEXIBLE CONTROL — See Cable, Flexible Control

TUBING, Flexible Metallic

(For oil or gasoline piping, speedometer shaft covering, wire covering, exhaust piping, carburetor hot air pipes, etc.)

Almond Mfg. Co., T. E., 1 Maple Ave., Auburnham, Mass.

American Metal Hose Co., Waterbury, Conn. (See page 291.)

American Metal Moulding Co., 141 N. J. Railroad Ave., Newark, N. J.

Atlantic Tubing Co., 1754 Cranston St., Providence, R. I.

Auto-Steelflex—See National Metal Molding Co.

Breeze Mfg. Co., 255 South St., Newark, N. J. "Fle-X-met."

Chicago Tubing & Braiding Co., 216-24 N. Clinton St., Chicago, Ill. "Rex."

Coates Clipper Mfg. Co., 237 Chandler St., Worcester, Mass.

Crane Packing Co., 1800 Cuyler Ave., Chicago, Ill.

Dewes Co., A., 199 Lafayette St., New York, N. Y. (See page 523.)

Duoflex—See Fischer Spring Co.

Fischer Spring Co., Chas., 88-90 Walker St., New York, N. Y. "Duoflex."

Fle-X-met—See Breeze Mfg. Co.

Flexible Armored Hose Co., 753 Main St., Buffalo, N. Y.

International Metal Hose Co., Harvard & E. 103rd St., Cleveland, O.

Klick Tubing & Braiding Co., 328-32 N. Randolph St., Philadelphia, Pa.

Lombardi Motor Car Co., 67-71 Minerva St., Derby, Conn.

Metal Hose & Tubing Co., 230 Tillary St., Brooklyn, N. Y. "Triplexd." (See page 523.)

Mulconroy Co., 54th & Jefferson Sts., Philadelphia, Pa.

National Metal Molding Co., Pittsburgh, Pa. "Auto-Steelflex." (See page 849.)

Pennflex—See Pennsylvania Flexible Metallic Tubing Co.

Pennsylvania Flexible Metallic Tubing Co. Broad & Race Sts., Philadelphia, Pa. "Pennflex."

Rex—See Chicago Tubing & Braiding Co.

Safety-Armorite Conduit Co., Bailey-Farrell Bldg., Pittsburgh, Pa.

Standard Metal Mfg. Co., 237 Chestnut St., Newark, N. J.

Steelflex—See National Metal Molding Co.

Titeflex Metal Hose Corp., Badger Ave. & Runyon St., Newark, N. J. (See page 293.)

Triplexd—See Metal Hose & Tubing Co.

United Metal Hose Co., 533 W. 23d St., New York, N. Y.

U. S. Flexible Metallic Tubing Co., Boyd & Omar Sts., Los Angeles, Cal.

Whalen Co., John, 85 Purchase St., Boston Mass.

TUBING, HARD RUBBER—See Rubber, Hard

TUBING, Iron-Lined Brass

American Brass Co., Waterbury, Conn. (See page 165.)

Phenix Tube Co., 182 N. 11th St., Brooklyn, N. Y.

Rome Mfg. Co., Railroad St., Rome, N. Y.

TUBING, RUBBER—See Tubing, Soft Rubber; also Rubber, Hard

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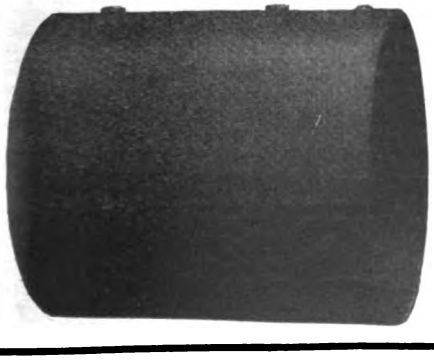

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300 gallons 38 in. diam. by 5 ft. 0 in. long
500 gallons 51 in. diam. by 5 ft. 0 in. long
575 gallons 53 in. diam. by 5 ft. 0 in. long
1,000 gallons 64 in. diam. by 5 ft. 0 in. long
2,000 gallons 64 in. diam. by 10 ft. 0 in. long
5,000 gallons 9 ft. 6 in. diam. by 9 ft. 9 in. long
10,000 gallons 9 ft. 6 in. diam. by 19 ft. 6 in. long
12,000 gallons 9 ft. 6 in. diam. by 23 ft. 6 in. long
15,000 gallons 9 ft. 6 in. diam. by 29 ft. 4 in. long
20,000 gallons 9 ft. 6 in. diam. by 39 ft. 0 in. long

Each tank is provided with standard cap screwed manhole and pipe connections to suit your convenience. Each tank is welded throughout, guaranteed absolutely oil tight and first class in every respect. Material full ¼-in. plate, but other sizes can be furnished if desired. Heads are flat and heavily reinforced with 6-in. channel.

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TUBING, Soft Rubber

Acme Rubber Mfg. Co., Trenton, N. J.
Alpha—See Parker, Stearns & Co.
Atlantic Tubing Co., 1756 Cranston St., Providence, R. I.
Boston Belting Co., 84 Linden Park St., Boston, Mass.
Boston Woven Hose & Rubber Co., Cambridge, Mass. "Bull Dog."
Bowers Rubber Works, 68-70 Sacramento St., San Francisco, Cal.
Bull Dog—See Boston Woven Hose & Rubber Co.
Canfield Rubber Co., Bridgeport, Conn.
Cincinnati Rubber Mfg. Co., Cincinnati, O. "Royal." (See page 523.)
Combination Rubber Mfg. Co., Bloomfield, N. J.
Continental Rubber Works, 1902 Liberty St., Erie, Pa. "Vitalic."
Dural Rubber Corp., Maple Ave., Flemington, N. J.
Empire Rubber & Tire Co., Mulberry St. & Clinton Ave., Trenton, N. J.
Everware Rubber Co., 241 Oregon St., Milwaukee, Wis.
Essex Rubber Co., May & Bleakes Sts., Trenton, N. J.
Federal Rubber Co. (Cudahy), Milwaukee, Wis.
Firestone Tire & Rubber Co., Miller & Sweitzer Aves., Akron, O.
Goodrich Co., B. F., S. Main St., Akron, O.
Indiana Rubber & Insulated Wire Co., Jonesboro, Ind.
Industrial Rubber Goods Co., Broad St., St Joseph, Mich. (See page 481.)
Latex Tire & Rubber Co., E. Scott St., Fond du Lac, Wis.
Mechanical Rubber Co., 307 W. Randolph St., Chicago, Ill. "Usco."
Mechanical Rubber Co., C. & P. & Nickel Plate R. R., Cleveland, O.
Milford Rubber Works, Milford, Ill.
Miller Rubber Co., Akron, O. (See page 979.)
National India Rubber Co., Bristol, R. I.
New Jersey Car Spring & Rubber Co., Wayne & Brunswick Sts., Jersey City, N. J.
New York Belting & Packing Co., 91 Chambers St., New York, N. Y.
Norwalk Mfg. Co. (East Norwalk), Norwalk, Conn.
Parker, Stearns & Co., 286 Sheffield Ave., Brooklyn, N. Y. "Alpha."
Pennsylvania Rubber Co., Jeannette, Pa.
Plexus Tire & Rubber Co., Tacony, Pa.
Quaker City Rubber Co., 629 Market St., Philadelphia, Pa.
Royal—See Cincinnati Rubber Mfg. Co.
Thermoid Rubber Co., Trenton, N. J. (See page 543.)
United States Tire Co., 1790 Broadway, New York, N. Y.
Usco—See Mechanical Rubber Co.
Vitalic—See Continental Rubber Works.
Voorhees Rubber Mfg. Co., 20-56 Bostwick Ave., Jersey City, N. J.

TUBING, Steel

American Steel Tube Co., Buckeye St., Terminal R. R., Toledo. O.
American Tube Co., 3704 S. Rockwell St., Chicago, Ill.
American Tube & Stamping Co., 411 Hancock Ave., Bridgeport, Conn.
Bordentown Steel & Tube Corp., Bordentown, N. J.
Connecticut Tubing Co., 556 Capitol Ave., Hartford, Conn.
Dahlstrom Metallic Door Co., E. Second & Buffalo Sts., Jamestown, N. Y.
Delaware Seamless Tube Co., Auburn, Pa.
Detroit Seamless Steel Tubes Co., W. Warren Ave. & Wyoming St., Detroit, Mich.
Elisco—See Elyria Iron & Steel Co.
Elyria Iron & Steel Co., Cleveland, O. "Elisco." (See page 1025.)
Emco—See Excello Mfg. Co.
Empire Art Metal Co., College Point, N. Y. "Titan."
Empire Tube & Steel Corp., College Point, N. Y.
Excello Mfg. Co., 923 Westminster St., Providence, R. I. "Emco."
Fiat Metal Mfg. Co., 217-23 W. Huron St., Chicago, Ill.
Frasse & Co., Peter A., New York, N. Y. (Eastern Distributors for "Shelby Tubing.") (See page 279.)
Globe Seamless Steel Tubes Co., Peoples Gas Bldg., Chicago, Ill.
Ivins Tube Works, Ellwood, Oak Lane Station, Philadelphia, Pa.
Kawneer Mfg. Co., 931 Front St., Niles, Mich
Michigan Steel Tube Products Co., Elmtree Blvd., nr. Holbrook & Conant Sts. Detroit, Mich. (See page 987.)
Mohegan Tube Co., 306 Scott Ave., Brooklyn, N. Y. (See page 1145.)
Morris & Co., E. K., 311-17 W. Second St., Cincinnati, O. (Dealers.) (See page 1145.)
National Tube Co., Frick Bldg., Pittsburgh, Pa "Shelby."
Newark Tube & Metal Works, 560 Ferry St., Newark, N. J.
Ohio Seamless Tube Co., Shelby, O. (See page 1023.)
Ohio Steel Products Co., Mineral Ridge, O.
Perfection Metal Products Co., College Point, N. Y.
Pittsburg Shafting Co. of Detroit, 1300 W. Fort St., Detroit, Mich.
Pittsburgh Steel Products Co., Union Arcade, Pittsburgh, Pa.
Shelby—See National Tube Co.
Standard Metalwork Co., Thompsonville, Conn
Standard Steel Tube Co., Toledo, O. (See Inside Front Cover.)
Standard Welding Co., Cleveland, O. "Stanweld." (See page 1149.)
Stanweld—See Standard Welding Co.
Titan—See Empire Art Metal Co.
Toledo Steel Tube Co., 2115 Smead Ave., Toledo, O.
Tube Products Co., 2699 Guoin St., Detroit, Mich.
Ward's Sons Co., Edgar T., 44 Farnsworth St., Boston, Mass. (Eastern Distributors for Pittsburgh Tubing.) (See page 925.)

TUBING UNIONS—See Unions, Tubing

TUBULAR BOILERS—See Boilers, Steam

TUBULAR RIVETS—See Rivets, Tubular and Clinch

TUFTING BUTTONS—See Buttons, Upholstery

TUFTING MACHINES—See Machines, Upholstery

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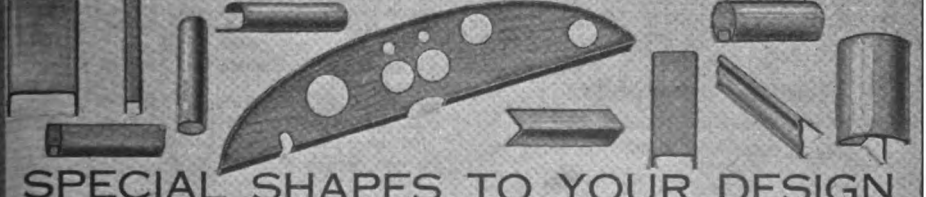

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DIRECT REPRESENTATIVES

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TUFTING TWINE—See Twine, Tufting

TUFTING WASHERS—See Washers, Tufting

TURN-BUCKLES, Airplane

Aero Mfg. & Accessories Co., 18-20 Dunham Pl., Brooklyn, N. Y.
Bridgeport Screw Co., Williston St. & Union Ave., Bridgeport, Conn.
D. W. F. Engineering Co., 69 Sprague St., Providence, R. I. "Liberty."
Dayton Metal Products Co., 330-36 N. Taylor St., Dayton, O.
Erie Specialty Co., Erie, Pa.
Liberty—See D. W. Engineering Co.
National Aeroplane Co., 549 W. Washington St., Chicago, Ill.
National Lock Washer Co., 40 Hermon St., Newark, N. J.
Rogers Construction Co., Gloucester City, N. J.
Saxon Mfg. Co., 1034-40 Grand Ave., Toledo, O.
Standard Screw Co. of Penna., Corry, Pa.
Standard Turnbuckle Co., Corry, Pa.
Steel Products Co., Cleveland, O. (See page 153.)

TURN-BUCKLES, Wrought

American Forging Co., 2700-98 N. 24th St., Birmingham, Ala.
Cleveland Hardware Co., 4500 Hamilton Ave., Cleveland, O.
Columbus Belt Works Co., Columbus, O. (See page 155.)
Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.
Haskell Mfg. Co., Wm. H., 24 Commerce St., Pawtucket, R. I.
Merrill Bros, 3 Arnold St., Maspeth, N. Y.
Michigan Bolt & Nut Co., ft. Meldrum Ave., Detroit, Mich.
New England Bolt & Steel Co., Bowdoin St. (Everett), Boston, Mass.
Peninsular Milled Screw Co., 6910 E. Lafayette St., Detroit, Mich.
Universal Specialty Co., 1405-07 S. Seventh St., St. Louis, Mo.
Wilcox, Crittenden & Co., 2 S. Main St., Middleton, Conn.

TURNING ATTACHMENTS—See Attachments, Lathe Crankshaft Turning

TURNTABLES, Automobile

(See also Castors and Wheel Trucks)

Bicycle Step Ladder Co., 6 W. Randolph St., Chicago, Ill. "Murray."
Canton Foundry & Machine Co., Third St. & Savannah Ave., S. E., Canton, O.
Ernst's Sons, C. F., 75 Lathrop St., Buffalo, N. Y.
Garage Engineering & Equipment Co., National Transit Bldg., Oil City, Pa.
Lansing Co., Lansing, Mich.
Link-Belt Co., Indianapolis, Ind. (See page 235.)
Murray—See Bicycle Step Ladder Co.
Nicols & Bro., George P., Old Colony Bldg., Chicago, Ill.
Perfection—See Zering Mfg. Co.
Pitless Auto Turntable Co., Traders Bldg., Kansas City, Mo.
Portland Garage Co., 49-51 Cross St., Portland, Me.
Richards-Wilcox Mfg. Co., Third St. & C., B. & Q. R. R. Tracks, Aurora, Ill.
Rochester Iron Works, Powers Bldg., Rochester, N. Y.
Smith Iron Co., G. W. & F., Gerard St., Boston, Mass.
Turner Machine Co., 28 Maple Ave., Danbury, Conn.
United Casting Co., Wilson & Violet Sts., Los Angeles, Cal.
Zering Mfg. Co., H., 4437 Appleton St., Cincinnati, O. "Perfection."

TURNTABLES, Storage Battery

(To eliminate the lifting of heavy batteries when repairing or overhauling them)

Ambu—See American Bureau of Engineering.
American Bureau of Engineering, Michigan Ave. & 16th St., Chicago, Ill. "Ambu." (See page 485.)
Continental Auto Parts Co., 1807 E. 17th St., Columbus, Ind. (See page 419.)

TURRET LATHES—See Lathes, Turret

TWINE, Tufting

Travers Twine & Cordage Co., 81 Warren St. New York, N. Y.

TWIST DRILLS—See Drills, Twist

TWO WAY COCKS—See Valves, Two Way Tank

TWO WAY VALVES—See Valves, Two Way Tank

UNDER BONNETS— See Pans, Dust

UNDERSLUNG FITTINGS FOR FORDS—See Fittings, Car Lowering

UNDERWATER EXHAUST BOXES, MOTOR BOAT—See Boxes, Motor Boat Underwater Exhaust

UNIONS, PIPE—See Fittings, Pipe

UNIONS, Tubing

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Aetna Brass & Bronze Co., 1631-35 E. 55th St., Cleveland, O.
American Brass Products Co., Pottstown, Pa.
Commonwealth Brass Corp., Detroit, Mich. (See page 1139.)
Detroit Brass Works, 99 Hobart St., Detroit, Mich.
Detroit Brass & Malleable Works, Holden & Greenwood Aves., Detroit, Mich.
Dole Valve Co., 1923 Carroll Ave., Chicago, Ill.
Dohner—See Ohio Metal Products Co.
Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.
Hancock Mfg. Co., 802 E. Henry St., Charlotte, Mich.
Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)
Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O.
McRae & Roberts Co., 100-116 S. Campbell Ave., Detroit, Mich.

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UNIONS, Tubing (Continued)

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)

Newton Mfg. Co., Church St., Plainville, Conn.

Ohio Metal Products Co., Dayton, O. "Dohner."

Powell Co., Wm., 2525 Spring Grove Ave., Cincinnati, O.

Richardson-Phenix Co., 122-28 Reservoir Ave., Milwaukee, Wis. "Union Cinch."

Roberts Brass Mfg. Co., 5401 W. Fort St., Detroit, Mich.

Union Cinch—See Richardson-Phenix Co.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

Williams Valve Co., D. T., Spring Grove Ave. & Township St., Cincinnati, O.

UNITS, TRACTOR — See Converters, Chassis

UNITS, TRUCK—See Converters, Chassis

UNIVERSAL GRINDERS—See Grinders, Universal

UNIVERSAL JOINT COVERS—See Boots, Steering Knuckle

UNIVERSAL JOINT DISCS—See Discs, Universal Joint

UNIVERSAL JOINTS — See Joints, Universal

UPHOLSTERY BINDINGS—See Bindings, Upholstery

UPHOLSTERY BROADCLOTH — See Broadcloth

UPHOLSTERY BUTTON MACHINES—See Machines, Upholstery Button

UPHOLSTERY BUTTONS—See Buttons, Upholstery

UPHOLSTERY CARPET—See Carpet

UPHOLSTERY CLEANERS—See Cleaners, Upholstery

UPHOLSTERY CLOTH—See Cloth; also Broadcloth; also Silk; also Whipcord

UPHOLSTERY DRESSING—See Dressing, Leather

UPHOLSTERY FABRICS—See Cloth; also Broadcloth; also Silk; also Whipcord

UPHOLSTERY FELT—See Felt, Upholstery

UPHOLSTERY HAIR—See Hair, Upholstery

UPHOLSTERY LACE—See Lace, Coach

UPHOLSTERY LEATHER—See Leather, Artificial; also Leather, Natural

UPHOLSTERY MACHINES—See Machines, Upholstery

UPHOLSTERY MOSS—See Moss, Upholstery

UPHOLSTERY NAILS—See Tacks, Upholstery

UPHOLSTERY SILKS—See Silk, Upholstery

UPHOLSTERY SPRINGS — See Springs, Seat

UPHOLSTERY TACKS—See Tacks, Upholstery

UPHOLSTERY THREAD—See Thread, Upholstery

UPHOLSTERY TUFTING MACHINES—See Machines, Upholstery Tufting

UPHOLSTERY TUFTING WASHERS—See Washers, Tufting

UPHOLSTERY VELVETS—See Velvets, Upholstery

UPHOLSTERY WHIPCORD—See Whipcord

UPRIGHT DRILLS—See Drills, Upright

VACUUM BOTTLES—See Bottles, Vacuum

V BELTS—See Belts, V

VACUUM CLEANERS—See Cleaners, Vacuum

VACUUM GASOLINE TANKS—See Tanks, Vacuum Gasoline

VACUUM TANK GAGES — See Gages, Vacuum Tank

VACUUM TANK METERS — See Gages, Vacuum Tank

VACUUM TANKS—See Tanks, Vacuum

VALVE CAGE REMOVING TOOLS—See Tools, Valve Cage Removing

VALVE CAP GASKETS — See Gaskets, Metallic

VALVE CAP GASKETS FOR FORDS—See Gaskets, Cylinder Head

VALVE GRINDERS—See Tools, Valve Grinding; also Machines, Valve Seating

VALVE GRINDING COMPOUNDS—See Compounds, Valve Grinding

VALVE GRINDING MACHINES—See Machines, Valve Seating

VALVE GRINDING TOOLS—See Tools, Valve Grinding

VALVE LIFT RODS—See Rods, Adjustable Valve Lift

VALVE LIFTERS—See Rods, Adjustable Valve Lift

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VALVE PUSH RODS—See Rods, Adjustable Valve Lift

VALVE REMOVING TOOLS— See Tools, chin Products

VALVE RESEATERS—See Tools, Valve Reseating

VALVE ROLLER PINS — See Screw Machine Products

VALVE ROLLERS — See Screw Machine Products

VALVE ROTATORS—See Rotators, Valve

VALVE SEATING MACHINES—See Machines, Valve Seeting and Grinding

VALVE SILENCERS—See Silencers, Overhead Valve

VALVE SPRING LIFTING TOOLS—See Tools, Valve Spring Lifting and Compressing

VALVE SPRINGS—See Springs, Machinery

VALVE SPRINGS FOR FORDS—See Springs, Engine Valve

VALVE STEM ADJUSTERS FOR FORDS—See Adjusters, Valve Stem

VALVE STEM PINS FOR FORDS—See Pins, Valve Stem

VALVE TAPPETS—See Rods, Adjustable Valve Lift

VALVE TOOLS, TIRE—See Tools, Tire Valve Rethreading

VALVE TURNING TOOLS—See Tools, Valve Seeting

VALVES, AUXILIARY AIR—See Mixers, Fuel

VALVES, Ball Check

(Small ball check valves with tubing connections; see also Unions, Tubing)

Detroit Brass & Malleable Works, Holden & Greenwood Aves., Detroit, Mich.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Lunkenheimer Co., Beekman & Tremont Sts., Cincinnati, O.

Williams Valve Co., D. T., Spring Grove Ave. & Township St., Cincinnati, O.

VALVES, CUT-OUT—See Valves, Muffler Cut-Out

VALVES, Engine Check

Monarch Valve Co., 112 Front St., Brooklyn, N. Y.

VALVES, Engine Poppet

(For Valves in the rough—See Forgings, Drop)

Ban-Rov & Co., 2230 S. Wood St., Chicago, Ill.

Birrell Silent Motor Co., 645 Washington Blvd., Chicago, Ill. "Flexy."

Driver-Harris Co., Harrison, N. J.

Dunham Co., Thos., Aurora, Ill. (See page 167.)

Eastern Electric Co., Hanover, Pa. (See page 1041.)

Efemco—See Foster, Merriam & Co.

Fansteel Products Co., North Chicago, Ill. (See page 1029.)

Flexedge—See Self-Seating Valve Co.

Flexy—See Birrell Silent Motor Co.

Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.

Foster, Merriam & Co., Meriden, Conn. "Efemco." (See page 821.)

Hyklas—See Parts Service Co.

Metzger Welding Co., 1625 Blue Rock St., Cincinnati, O. (See page 1151.)

Michigan Engine Valve Co., 115-17 Columbia St., W., Detroit, Mich. (See page 1095.)

National Steel Products Co., 2370 Franklin St., Detroit, Mich.

Parts Service Co., 9307-11 Hough Ave., Cleveland, O. "Hyklas." (See page 1207.)

Perfection Parts Mfg. Co., Ravenna, O.

Rich Tool Co., Railway Exchange Bldg., Chicago, Ill. (See page 1017.)

Schlieder Mfg. Co., Detroit, Mich. (See page 1109.)

Self-Seating Valve Co., 706-08 Townsend St., Chicago, Ill. "Flexedge." (See page 1037.)

Steel Products Co., Cleveland, O. (See page 153.)

Super Valve Mfg. Co., 3037 N. Clark St., Chicago, Ill. (See page 1039.)

Toledo Steel Products Co., Toledo, O. (See page 1131.)

Walker-Welder, 3974 14th Ave., Detroit, Mich.

Wilcox Motor & Mfg. Co., Saginaw, Mich. (See pages 823 and 1027.)

VALVES, Engine Poppet, for Fords

Acme Mfg. Co., Boonton, N. J.

Canton, Co., A. S., 174 Franklin St., New York, N. Y.

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.

Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.

Hill-Smith Metal Goods Co., 83 Brookline Ave., Boston, Mass. (See page 417.)

Illinois Brass Mfg. Co., 224-30 W. Ontario St., Chicago, Ill.

Metzger Welding Co., 1625 Blue Rock St., Cincinnati, O. (See page 1151.)

Michigan Engine Valve Co., 115-17 Columbia St., W., Detroit, Mich. (See page 1095.)

Morgan Mfg. Co., Court St., Keene, N. H. (See page 751.)

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)

U. S. Metal Goods Co., 5211 Euclid Ave., Cleveland, O. (See page 685.)

Whitehouse Mfg. Co., 42 Elm St., Newark, N. J. (See page 637.)

VALVES, Gasoline Lock

(Controlling supply of gas to the carburetor; to prevent unauthorized use of car)

Esco Mfg. Co., 228 Farnsworth St., Detroit, Mich.

Gasolock—See Headlight Support Co.

Headlight Support Co., 728 Woodward Ave., Detroit, Mich. "Gasolock."

McRae & Roberts Co., 100-16 S. Campbell Ave., Detroit, Mich.

O. K. Lock Co., 264 Broadway, Buffalo, N. Y.

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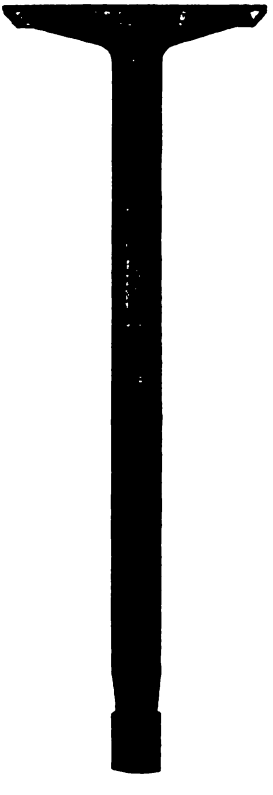
FANSTEEL

Valves



HIGH TUNGSTEN VALVES

LOW TUNGSTEN VALVES

MERCURY COOLED VALVES

SPECIAL ALLOY STEEL VALVES

Fansteel Valves Meet Every Requirement.

FANSTEEL PRODUCTS COMPANY, INC.

GENERAL OFFICES AND WORKS

NORTH-CHICAGO ILLINOIS

CHICAGO OFFICE

72 WEST ADAMS STREET

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VALVES, GASOLINE RESERVE—See Valves, Two Way Tank

VALVES, GASOLINE RESERVE, FOR FORDS—See Cocks, Fuel Supply and Reserve

VALVES, GENERATOR—See Valves, Motor Boat Generator

VALVES, LOCK—See Valves, Gasoline Lock

VALVES, MIXING—See Vaporizers

VALVES, Motor Boat Generator

(For Carburetors—See Carburetors)

Adjusto—See Powell Co.

Generator Valve Co., 47 Dinsmore Pl., Brooklyn, N. Y. "James."

James—See Generator Valve Co.

Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O. "Nonpareil."

Monarch Valve Co., 112 Front St., Brooklyn, N. Y.

Nonpareil—See Lunkenheimer Co.

Powell Co., Wm., 2525 Spring Grove Ave., Cincinnati, O. "Adjusto."

VALVES, Motorcycle Muffler Cut-out

Oldberg Mfg. Co., Detroit, Mich. (See page 653.)

VALVES, Muffler Cut-Out

(For cut-out pedals—See Pedals, Horn and Cut-out)

Au-To Compressor Co., Wilmington, O. "Oro."

Badger Mfg. Corp., Milwaukee, Wis. (See page 173.)

Barco Mfg. Co., 212-22 W. Illinois St., Chicago, Ill.

Buffalo Pressed Steel Co., Buffalo, N. Y. (See page 655.)

Cassidy Co., Inc., Edward A., 23 W. 43d St., New York, N. Y. (Sales Department for G. Piel Co., Long Island City, N. Y.) "G. P." (See page 87.)

Cooper Mfg. Co.—See Fulton Co.

Emco Mfg. Co., 4 Griswold St., Binghamton, N. Y. "Taber." (See page 497.)

Ewald—See Zinke Co.

Fulton Co., Dept. S., 75th & National Aves., Milwaukee, Wis. (Sole Distributors for Cooper Mfg. Co., Marshalltown, Ia. (See page 1036.)

G. P.—See Cassidy Co.

Gabriel Mfg. Co., 1421 E. 40th St., Cleveland, Ohio.

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 174 and 175.)

Goodrich-Lenhart Mfg. Co., Hamburg, Pa. (See page 721.)

Gray-Hawley Mfg. Co., 3123-31 Jefferson Ave., E. Detroit, Mich.

Handy—See Lunkenheimer Co.

Husk—See Western Brass Mfg. Works.

Losee, J. S., Hebron, Ill. (See page 1185.)

Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O. "Handy."

Oldberg Mfg. Co., Detroit, Mich. (See page 653.)

Oro—See Au-To Compressor Co.

Perfect—See Riverside Machine Works.

Perfection Machine Co., Jeromeville, O.

Petry Co., N. A., 328 N. Randolph St., Philadelphia, Pa.

Piel Co.—See Cassidy Co.

Powell Muffler Co., Utica, N. Y. (See page 655.)

Riverside Machine Works, 37 S. Jefferson St., New Castle, Pa. "Perfect."

Romort Mfg. Co.—See Zinke Co.

Rudie—See Western Brass Mfg. Works.

Stanhope Forge & Machine Works, 49-51 Lansdowne St., Cambridge, Mass.

Stryker, C. W., 240 Shonnard St., Syracuse, N. Y.

Taber—See Emco Mfg. Co.

Waller Cut-out Co.—See Zinke Co.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. "Rudie," "Husk." (See page 1097.)

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Romort Mfg. Co., Oakfield, Wis. "Ewald." also Waller Cut-Out Co., Oelwein, Ia.) (See pages 310 and 311.)

VALVES, Muffler Cut-Out, for Fords

Am-Pe-Co Sales Co., Marshalltown, Ia. "Marshalltown." (See page 437.)

Au-To Compressor Co., Wilmington, O. "Oro."

Barco Mfg. Co., 212-22 W. Illinois St., Chicago, Ill.

Badger Mfg. Corp., Milwaukee, Wis. (See page 173.)

Cassidy Co., Inc., Edward A., 23 W. 43d St., New York, N. Y. (Sales Department for G. Piel Co., Long Island City, N. Y.) "G. P." (See page 87.)

Empire—See S. B. R. Specialty Co.

Emco Mfg. Co., 4 Griswold St., Binghamton, N. Y. "Taber." (See page 497.)

Ewald—See Zinke Co.

G. P.—See Cassidy Co.

Goodrich-Lenhart Mfg. Co., Hamburg, Pa. (See page 721.)

Gould Mfg. Co., Seneca Falls, N. Y.

Gray-Hawley Mfg. Co., 3123-31 Jefferson Ave., E. Detroit, Mich.

Illinois Brass Mfg. Co., 224-30 W. Ontario St., Chicago, Ill.

Marshalltown—See Am-Pe-Co Sales Co.

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

Mosco—See Motor Specialties Co.

Motor Specialties Co., Waltham, Mass. "Mosco."

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)

Oldberg Mfg. Co., Detroit, Mich. (See page 653.)

Oro—See Au-To Compressor Co.

Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. (See page 317.)

Petry Co., N. A., 328 N. Randolph St., Philadelphia, Pa.

Piel Co.—See Cassidy Co.

Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y.

Roberts, G. E.—See Zinke Co.

Romort Mfg. Co.—See Zinke Co.

S. B. R. Specialty Co., 17-19 Princeton St., East Orange, N. J. "Empire."

Sunvold Co., H. H., Sacred Heart, Minn.

Taber—See Emco Mfg. Co.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Romort Mfg. Co., Oakfield, Wis. "Ewald"; also Roberts, G. E., Milwaukee, Wis.) (See pages 310, 311 and 314.)

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THE FULTON LINE

The Signal that WINS The Right of Way

OVER 250,000 of these melodious chime signals are now in use in all parts of the world. They WIN the right of way by their pleasing tone, a most courteous warning of the road that gives desirable distinction to any car. Easily attached to exhaust pipe. Will last a life time and give no trouble.

The AERMORE Exhaust Horn

Also popular for trucks and tractors. Useful in signaling from the field or while threshing, wood sawing, silo filling, to signal to the crew, etc. A size to fit any motor.

No. 0—17-inch Aermore outfit complete with valve for cars of 40 h.p. or over..**$12.00**

No. 1—15-inch Aermore outfit complete for cars of 30 h.p..... **10.00**

No. 2—13-inch Aermore outfit complete for cars of 25 h.p..... **9.00**

No. 3—11-inch Aermore outfit complete for Fords and other light cars **$8.00**

Add **50c** to above prices west of Rocky Mountains.

Price of Style "G" valve when ordered separate, all sizes.....**$2.00**

In ordering, give outside diameter of exhaust pipe between muffler and engine. Dealers, ask your jobber. If he cannot supply you, write direct, giving jobber's name.

THE FAMOUS EKLIPS SPARK PLUGS

leak and sootproof, sure spark, very durable.

THE SPECIAL EKLIPS GIANT

Suitable for heavy trucks and high power cars.

$1.00 Each

Medium Quality Eklips "C" only 75c

MANUFACTURED BY

THE FULTON COMPANY

75th & National Aves. MILWAUKEE, WISCONSIN

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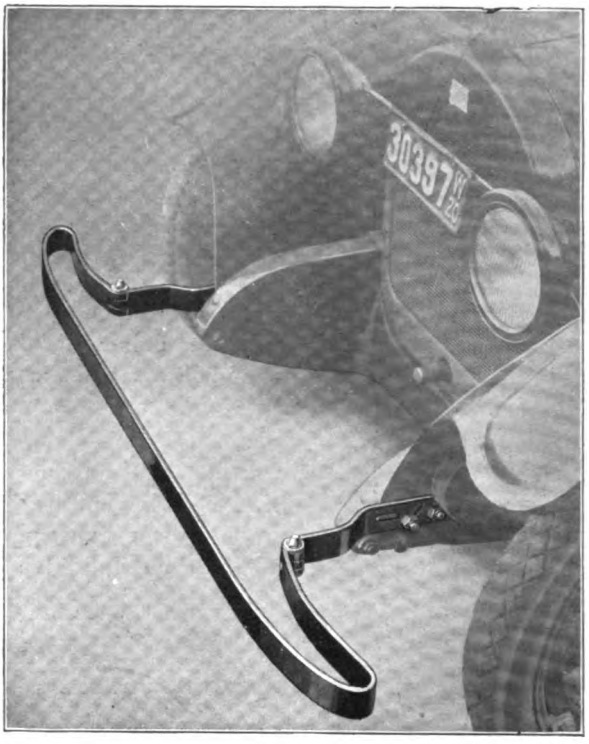
THE FULTON LINE



THE FULTON Universal Spring Bumper

A new bumper that combines more desirable qualities than any other bumper on the market. Can be fitted in 30 minutes to any car of the extending frame type. The offset in the brackets accommodates any width frame by merely transposing the brackets. The special hinge gives this bumper more resiliency, and makes it absorb shock without damage to bumper or car.

Face of the bar is perfectly smooth, having no clamps or fittings to catch or rattle or get out of line. 60-inch bar in front and 66-inch bar for the rear, thus giving full protection to fenders and entire rear end. Bumper folds into small package, thus saving freight charges. A handsome, durable, non-breakable, inexpensive bumper for any size car. In ordering, designate them as follows:

Stock Number	Description	List
S-101-B—60″	bar, black finish	**$11.55**
S-102-N—60″	bar, black and nickel finish	**13.65**
S-103-B—66″	bar, black finish	**12.10**
S-104-N—66″	bar, black and nickel finish	**14.20**

MANUFACTURED BY

THE FULTON CO. 75th & National Avenues Milwaukee, Wisconsin

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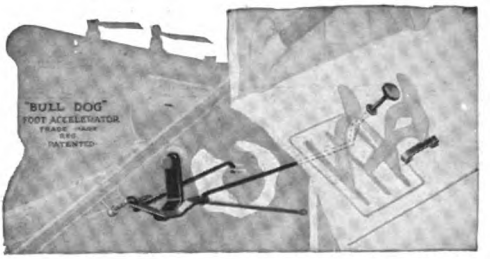
THE FULTON LINE
MILWAUKEE

"BULL DOG" Foot Accelerator

Gives Fords the same sensible, easy foot control of speed as that of highest priced cars. Prevents accidents due to killing the engine when driver becomes confused. Special foot rest provided aids in maintaining uniform speed, even on roughest roads. Easy to install and requires no further attention. Absolutely correct in design, substantial, simple and practically unbreakable. Retail price, complete, $1.50.



"Bull Dog" Running Board Support

"BULL DOG" RUNNING BOARD SUPPORT

We do not enter the field with our RUNNING BOARD SUPPORT with a view of competition in price, but are offering the trade something absolutely new and individual—built neat and durable with that same view of satisfaction that characterizes the rest of the "BULL DOG" PRODUCTS.

The "BULL DOG" RUNNING BOARD SUPPORT is so constructed as to truss itself by attaching only to running boards and hangers—a very important feature. Prevents vibration, racking of fenders, and securely holds the running boards under any load.

No clamps to work loose—and will not interfere with the removal of the rear axle.

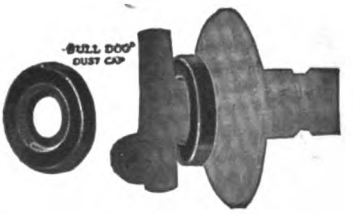
Its construction is the strongest ever offered in an item of this kind, 1" T iron being used. Price **$2.25.**

MANUFACTURED BY

THE W. H. THOMAS MFG. CO. **Spencer, Iowa**

"BULL DOG" Bearing Protector

Fits all Fords and Chevrolet 490. A useful device, preventing dirt, sand, mud, water and other injurious substances from entering the hub—allows bearings to run in a clean lubricant. Greatly reduces wear on these parts and is of utmost importance to the motorist who tries to keep his car in safe running condition. Price complete, pair, $1.00.



MANUFACTURED BY

THE W. H. THOMAS MFG. CO. **Spencer, Iowa**

THE FULTON CO.

75th & National Avenues
Milwaukee, Wisconsin

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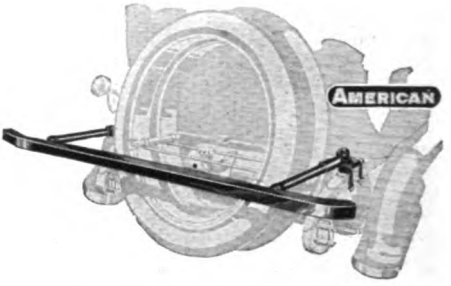
THE FULTON LINE

AMERICAN BUMPERS

Specialization guarantees superiority. American Bumpers are manufactured by a firm whose entire efforts are devoted to making bumpers. Trained specialists and years of experience—skilled labor and the finest materials combined are responsible for the excellent reputation American Bumpers maintain with all dealers and motorists.

AMERICAN BUICK SPECIAL

Especially designed for 1919, 1920 and 1921 Buick cars only. The construction of the splash pan and fenders of the new Buick makes it very difficult to attach any bracket but a special. When equipped with snubbers, as nearly all are, an American Special bracket is without question the easiest to attach to any on the market. Simply remove the spring bolt nut and replace it with a special cap screw, both furnished with bumper.



AMERICAN EXTENSION REAR END

An attractive durable, strong rear end bumper especially made to fit all cars with three-quarters of semi-elliptic springs on rear end. Bracket has an adjustable length of 8 to 15 inches.

AMERICAN CANTILEVER REAR

Manufactured principally for rear end of all Buick Sixes. Attached by means of the bolt to the frame, which extends to carry the gasoline tank and holder. By merely drilling two holes this bumper can be used on Reo Six, Peerless, Kissel Kar and other cars having rear cantilever springs.

AMERICAN NU STYLE

Made for Nash and other cars with splash pans and fenders that reach the end of the frame. One of the principal features of the bracket, uncommon to other brackets, is the part that fits over the end of the frame, accepting the weight of all blows at the strongest point. Hook bolts fasten around the edge of frame and are made flat so they will not bulge the splash pan when in position. This bumper is recommended for the Grant Six, Lexington, Haynes, Maxwell, Liberty, Moline Knight, Nash, Overland, Olds 85-6 and 88-4, Scripps-Booth and Stutz. Also a number of others.

AMERICAN FORD AND CHEVROLET STEERING WHEELS

Non-tilting and Tilting types, plain or corrugated rims all 17 inches in diameter. Locking device on tilting wheels is positive in action, cannot become unfastened, easily operated. Rims finished in black walnut and enamel. Spider furnished in either malleable or aluminum.

Dealers—Ask Your Jobbers For Prices

Manufactured by

AMERICAN METAL PARTS MFG. CO.
Milwaukee, Wisconsin

Sole Sales Representatives:

THE FULTON CO.

75th and National Aves. MILWAUKEE, WIS.

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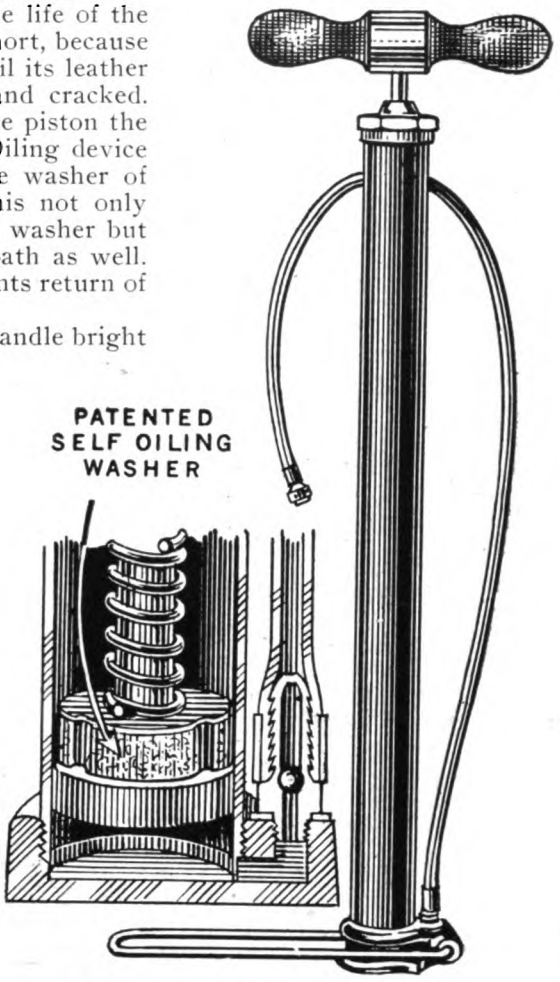
THE FULTON LINE

MONROE SELF OILING PUMPS

Most Tire Pumps are discarded before they wear out. The life of the average pump is quite short, because the pump lasts only until its leather washer has dried out and cracked. With every stroke of the piston the patented Monroe Self Oiling device feeds lubricant onto the washer of the Monroe Pump. This not only lengthens the life of the washer but lubricates the plunger path as well. A ball check valve prevents return of air into the pump.
Top cap and ferrule on handle bright nickeled.



No. 10—Monroe Self-Oiling Pump, 1¼ in. cylinder 21⅞ in. long. Black enamel—folding base, nickel plated.

Price $2.75

No. 15—Monroe Self-Oiling Pump, 1½ in. cylinder, 21⅞ in. long, black enamel, folding base, nickel plated.

Price $3.00

No. 350—A good pump with which to meet competition — without self-oiling features, 20 in. over all, black enamel. Packed loose, 50 in box.

Price $2.00

Jobbers get our proposition on Ford Brake Shoes and Spot Light Brackets

MANUFACTURED BY

MONROE AUTOMOTIVE EQUIPMENT MFG. CO., Monroe, Mich

Sole Sale Representatives

THE FULTON COMPANY

75th & National Avenues **MILWAUKEE, WIS.**

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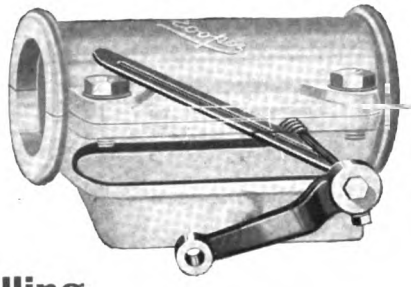
THE FULTON MILWAUKEE LINE

HERE TO STAY

Cooper CUT OUT



The Easy Selling Profitable Line

Here's the cutout that the whole motor world knows, respects and endorses—the COOPER "SPECIAL" CUTOUT—used on the motor cars of men who buy for true and consistent performance.

For the COOPER "SPECIAL" CUTOUT has proved its character—has won recognition—and is here to stay. It blasts out the carbon—reveals the secrets of the motor—the missing plug—the weak cylinder—and it makes the engine snappier—full of pep—ready to jump in a twinkling—with speed and power galore.

Your Jobber can Supply you—if not Write us Direct Giving Us His Name

SIZES	Complete	With No. 3 Pedal	With No. 4 Pedal	With No. 5 Lever
1½"	$3.00	$3.50	$3.50	$3.50
1⅝", 1¾", 1⅞"	3.50	4.00	4.00	4.00
2", 2⅛"	4.00	4.50	4.50	4.50
2⅛", 2⅜", 2½", 2⅝"	4.50	5.00	5.00	5.00
2¾", 2⅞", 3"	6.00	6.00	6.00	6.00

Pedal No. 3

Pedal No. 4

Cooper Screw Type Muffler Cutout for Buick Cars

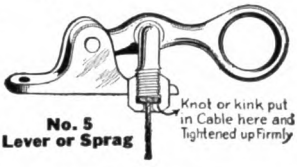
It's made of bronze—withstands heat better than cast or malleable iron. Attaches easily. Just remove the standard plug from the exhaust pipe, screw in the COOPER "SCREW TYPE" CUTOUT and the job's done for good. It can't come loose—can't rattle nor squeak nor cause any annoyance whatever. The bell shape forms a megaphone—causes loud tone—simplifies locating weak cylinder, etc.

COOPER MFG. COMPANY

Dept. B MARSHALLTOWN, IA.

THE FULTON CO.

SALES MANAGERS



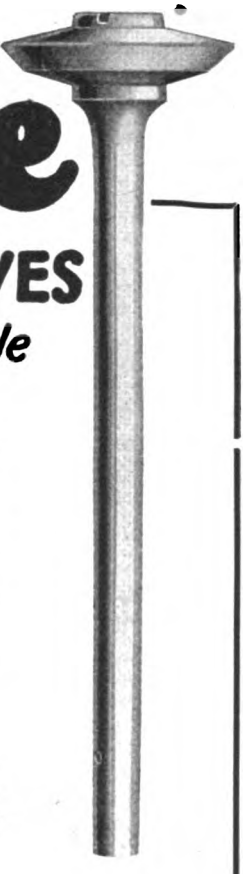
No. 5 Lever or Sprag

Knot or kink put in Cable here and Tightened up Firmly

Flexedge

SELF-SEATING LAMINATED VALVES

Sensible-Logical-Inevitable



A Valve-Seat Carbon Remover at Work While You Drive

FLEXEDGE VALVES Prevent Carbon Deposits

The FLEXEDGE principle is merely a slight flexation, which is so small as to measure only a tiny fraction of a thousandth of an inch, yet sufficient to gently scrape the valve seat, removing the tiny flecks of carbon, which collect after each explosion.

FLEXEDGE SELF-SEATING VALVES continuously grind themselves, always seat. They are installed just like all other valves.

FLEXEDGE DISTRIBUTORS

Herring Motor Company, Des Moines, Iowa

The Gibson Company, Indianapolis, Indiana

Motor & Machinists Supply Co., Kansas City, Mo.

Reinhard Brothers, Inc., Minneapolis, Minn.

Repass Automobile Company, Waterloo, Iowa

Chicago Auto. Supply House, 1349-53 Michigan Ave., Chicago, Ill.

Motor Car Supply Co., 1451-5 Michigan Ave., Chicago, Ill.

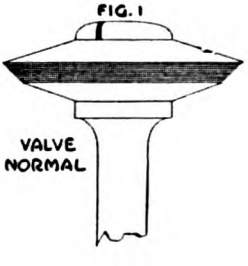
Armentrout & Sons, Washington, D. C.

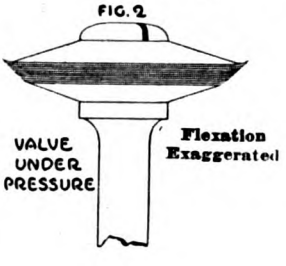
Chanslor & Lyon Co.

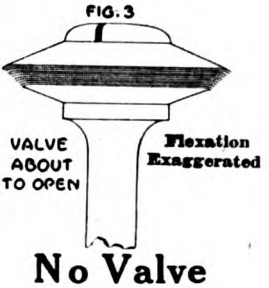
San Francisco
Seattle

Los Angeles
Tacoma
Spokane

San Diego
Portland







Super Power

No Valve Grinding

Manufactured for all Cars by the

SELF-SEATING VALVE COMPANY

CHICAGO 706-8 Townsend Street ILLINOIS

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VALVES, Needle

American Brass & Iron Co., Detroit, Mich. (See page 205.)

Champion Pneumatic Machinery Co., 1402 Michigan Ave., Chicago, Ill. (See page 401.)

Detroit Brass Works, 99 Hobart St., Detroit, Mich.

Detroit Brass & Malleable Works, Holden & Greenwood Aves., Detroit, Mich.

Lunkenheimer Co., Beekman & Waverly Sts., Binghamton, N. Y.

Powell Co., Wm., 2535 Spring Grove Ave., Cincinnati, O.

Williams Valve Co., D. T., Spring Grove Ave. & Township St., Cincinnati, O.

VALVES, Oil Tube for Fords

(Valve to be attached to oil tube to permit easy cleaning of tube)

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. "Shurflo." (See pages 174 and 175.)

Shurflo—See Gemco Mfg. Co.

VALVES, POPPET—See Valves, Engine Poppet

VALVES, PRESSURE REGULATING—See Regulators, Pressure

VALVES, RESERVE—See Valves, Two Way Tank

VALVES, RESERVE, FOR FORDS—See Cocks, Fuel Supply

VALVES, SAFETY—See Valves, Steam Safety; also Valves, Tire

VALVES, STEAM PRESSURE CONTROL—See Controllers, Vulcanizer Steam Pressure

VALVES, Steam Safety

American Steam Gauge & Valve Mfg. Co., 208-20 Camden St., Boston, Mass.

Ashton Valve Co., 161 First St. (Cambridge), Boston, Mass.

Caldwell, R. L., 74 Cortlandt St., New York, N. Y. "Notaleak."

Champion Pneumatic Machinery Co., 1402 Michigan Ave., Chicago, Ill. (See page 401.)

Notaleak—See Caldwell, R. L.

Williams Valve Co., D. T., Spring Grove Ave. & Township St., Cincinnati, O.

VALVES, Steam Throttle

Williams Valve Co., D. T., Spring Grove Ave. & Township St., Cincinnati, O.

VALVES, TANK—See Valves, Two Way Tank; also Cocks, Spring Key; also Cocks, Standard; also Valves, Needle

VALVES, Tire

Atlas Auto Supply Co., 697 W. Austin Ave., Chicago, Ill. "Day." (See page 273.)

Automatic Safety Valve Corp., Long Island City, N. Y. "Presurite."

Day—See Atlas Auto Supply Co.

Griffin Mfg. Co., 113 State St., Boston, Mass.

Holt Auto Devices Co., Conway Bldg., Chicago, Ill.

Newsom Valve Co., 2714 La Salle St., St. Louis, Mo.

Presurite—See Automatic Safety Tire Valve Corp.

Pulverman—See Tirometer Valve Corp. of America.

Schrader's Son, A., Brooklyn, N. Y. (See page 768.)

Standard Tire Valve Co., 223 Broadway, New York, N. Y.

Tirometer Valve Corp. of America, Charleston, W. Va., "Pulverman." (See page 1041.)

VALVES, Two Way Tank

(Fuel Reserve Valves or Cocks)

Automobile Appliance Corp., 22 Custom House St., Boston, Mass. "Reservo."

Breeze Mfg. Co., 255 South St., Newark, N. J.

Clark & Co., A. C., 1035 E. 76th St. (Grand Crossing), Chicago, Ill. "Hi-Lo."

Hancock Mfg. Co., 802 E. Henry St., Chat[illegible] Mich.

Hi-Lo—See Clark & Co.

Ideal Brass Works, 560 N. Elder Ave., Indi[illegible]apolis, Ind.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Lunkenheimer Co., Beekman & Waverly Sts. Cincinnati, O. "Quadlock."

Quadlock—See Lunkenheimer Co.

Reservo—See Automobile Appliance Corp.

Roberts Brass Mfg. Co., 5401 W. Fort St., Detroit, Mich.

VALVES, TWO WAY TANK, FOR FORDS—See Cocks, Fuel Supply

VALVES, Water Circulation Regulating

(Dash controlled valve for regulating the circulation of water in the cooling system.)

Johnson Co., 1909 E. Forest Ave., Detroit, Mich. "Temp-Trol."

Temp-Trol—See Johnson Co.

VANADIUM

American Vanadium Co., Vanadium Bldg., Pittsburgh, Pa.

Vanadium Corp. of America, Equitable Bldg., New York, N. Y.

VANADIUM STEEL—See Steel, Vanadium

VANITY CASES — See Cases, Toilet and Card

VAPOR ENGINE STARTERS—See Starters, Gasoline or Vapor Engine

VAPORIZERS, Motor Boat Kerosene

Olsen—See United States Vaporizer Co.

United States Vaporizer Co., 216 State St., Boston, Mass. "Olsen."

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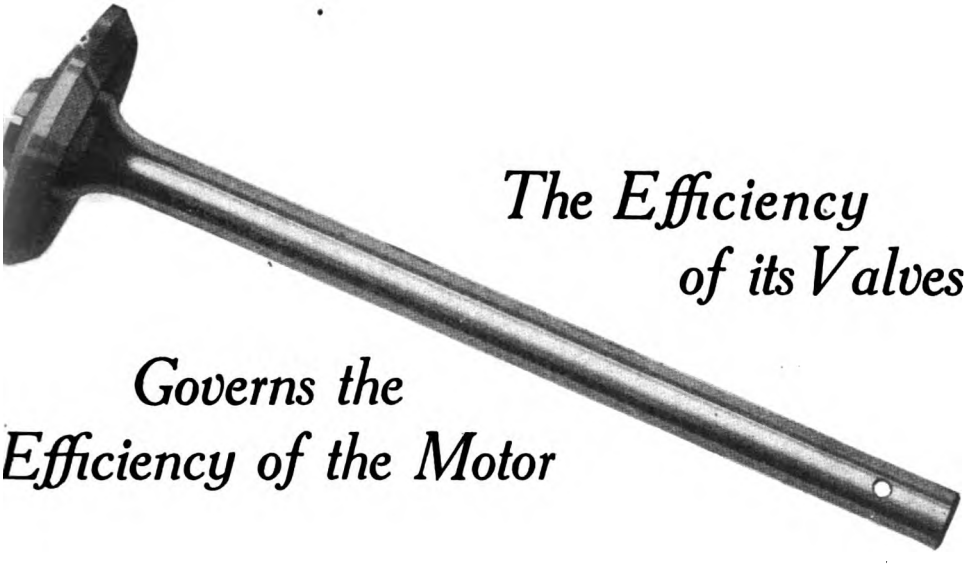
SUPER

Guaranteed Not To Warp



The Super Valve is the lightest, most durable and most efficient valve ever produced. Because of their light weight, Super Valves are easier on the cams, springs and timing gears, and therefore they are easier on the motor. They have less weight than the types of valves now in general use, but more power, greater strength and longer life. Super Valves are made in any size and of any alloy steel to suit your requirements.

Super Valve Mfg. Co., 3037 North Clark St., Chicago, Ill.

VALVE

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VAPORIZERS or MIXING VALVES, Gasoline

Bruford Vaporizing Co., Bloomington, Ill.
Commonwealth Brass Corp., Detroit, Mich. (See page 1139.)
Conservo Sales Co., 225 Fifth Ave., New York, N. Y.
Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O. "Nonpareil."
Nonpareil—See Lunkenheimer Co.
Powell Co., Wm., 2525 Spring Grove Ave., Cincinnati, O.
Quickstart—See Scientific Devices Co.
Scientific Devices Co., 15 Park Row, New York, N. Y. "Quickstart."
Vaghi Vaporizer Co., Depot Pl., Bethel, Conn.
Wilkinson Co., Wm. H., Main St., West Medway, Mass.

VARNISH BRUSHES—See Brushes, Paint and Varnish

VARNISH DRYING ROOMS—See Rooms, Paint and Varnish Drying

VARNISH PRESERVATIVES—See Polishes, Automobile Body

VARNISH REMOVERS—See Removers, Paint, Enamel and Varnish

VARNISHES

Acme White Lead & Color Works, 8250 St. Aubin Ave., Detroit, Mich.
Akron Varnish Co., Akron, O.
American Chemical & Mfg. Co., 617 Monticello Ave., Norfolk, Va. "Kleckspar."
American Paint Products Co., 736 S. Wabash Ave., Chicago, Ill.
American Varnish Co., 1138 N. Branch St., Chicago, Ill.
Anglo-American Varnish Co., 53-63 Johnson St., Newark, N. J.
Armitage & Co., John L., Newark, N. J.
Atlantic Varnish Works, 2829 Lester St., Richmond, Va. "Ultra-Blac."
Ault & Wilborg Co., New, Seventh & Culvert Sts., Cincinnati, O.
Auto-Lak—See Johnson & Son.
Auto Products Mfg. Co., Buffalo, N. Y. "Renu-R-Kote." (See page 225.)
Auto Specialties Mfg. Co., Buffalo, N. Y. (See page 1193.)
B. P. S.—See Patterson-Sargent Co.
Barrett Varnish Co., 233 W. Lake St., Chicago, Ill.
Bay State—See Wadsworth, Howland & Co.
Beckwith-Chandler Co., 320 Fifth Ave., New York, N. Y.
Benoit, Constant A., Brooklyn, N. Y. (See page 225.)
Berry Bros., 211 Lieb St., Detroit, Mich.
Billings-Chapin Co., 1163 E. 40th St., Cleveland, O.
Bissell Varnish Co., Bridgeport, Conn.
Boston Varnish Co., (Everett Sta.), Boston, Mass. "Kyanize."
Brooks & Co., Clarence, 249-77 Chestnut St., Newark, N. J.
Buckeye Paint & Varnish Co., 15th & Lucas Sts., Toledo, O.
Bulls-Eye—See Zinsser & Co.
Bunker Hill—See New England Oil, Paint & Varnish Co.
Chase, Roberts & Co., Fifth St. & West Ave., Long Island City, N. Y. "Kismet."
Chi-Var-Co—See Chicago Varnish Co.
Chicago Varnish Co., 2100 Elston Ave., Chicago, Ill. "Chi-Var-Co."
Cincinnati Varnish Co., 211 South St., Cincinnati, O.
Cleveland Varnish Co., Cleveland, O. "Freelastic." (See page 1041.)
Columbus Varnish Co., Columbus, O. "Peerless Mirroroid." (See page 365.)
Da Cote—See Murphy Varnish Co.
Devoe & C. T. Raynolds Co., F. W., 101 Fulton St., New York, N. Y.
Dibble Color Co., 445 Larned St., W., Detroit, Mich.
du Pont de Nemours & Co., E. I. Wilmington, Del. "Flint." (See page 223.)
Effecto—See Pratt & Lambert.
Elmendorf Varnish Co., 848 Larrabee St., Chicago, Ill.
Empire Varnish Co., 2638-42 E. 76th St., Cleveland, O.
Flint—See du Pont de Nemours & Co.
Flint Varnish & Color Works, Hamilton & St. Johns Sts., Flint, Mich.
Flood & Conklin Co., 136 Chestnut St., Newark, N. J. "Radium."
Forest City Paint & Varnish Co., 3324 Lakeside Ave., Cleveland, O.
Freelastic—See Cleveland Varnish Co.
French & Co., Samuel H., York Ave., Fourth & Callowhill Sts., Philadelphia, Pa.
Gillespie & Son, Chas. H., 19 Dey St., Jersey City, N. J.
Glidden Co., W. Madison Ave. & L. S. & M. S. Ry., Cleveland, O.
Gold Cross—See Stewart-Mowry Co.
Graves Co., N. Z., 22-26 S. Third St., Philadelphia, Pa.
Gregg Varnish Co., St. Louis, Mo.
Harland & Son, Wm, Genesee St. & Erie Canal, Buffalo, N. Y.
Harrison Works, 3523 Grays Ferry Rd., Philadelphia, Pa. "Vitrolac."
Heath & Milligan Mfg. Co., 1333 Seward St., Chicago, Ill.
Hildreth Varnish Co., 90 West St., New York, N. Y.
Hilo Varnish Corp., Marcy & Flushing Aves., Brooklyn, N. Y.
Howe Varnish Co., 253 Norman Ave., Brooklyn, N. Y.
Indianapolis Paint & Color Co., 120-24 S. Illinois St., Indianapolis, Ind.
Johnson & Son, S. C., 1012 16th St., Racine, Wis. "Auto-Lak."
Johnston Paint Co., R. F., Pearl & Main Sts., Cincinnati, O.
Kismet—See Chase, Roberts & Co.
Kleckspar—See American Chemical & Mfg. Co.
Kyanize—See Boston Varnish Co.
Liberty Chemical Works, 352 E. Illinois St., Chicago, Ill.
Lucas & Co., John, 322-30 Race St., Philadelphia, Pa.
McDougall-Butler Co., 6 Evans St., Buffalo, N. Y.
Masury & Son, John W., 44-50 Jay St., Brooklyn, N. Y.
Mirrolike Mfg. Co., 203 Eighth St., Long Island City, N. Y.
Mountain Varnish & Color Works, Toledo, O.
Murphy Varnish Co., Chestnut & McWhorter Sts., Newark, N. J. "Da-Cote."
New England Oil, Paint & Varnish Co., Everett, Mass. "Bunker Hill."
Nice, Eugene E., 268-74 S. Second St., Philadelphia, Pa.

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WE MANUFACTURE

POPPET VALVES

EASTERN ELECTRIC COMPANY HANOVER, PA.

Adds 1/3 to Tire Life

Here is the first real valve improvement in automobile history. The Tirometer is a combination valve and pressure gauge protected by a transparent cap tha always shows tire pressure at a glance Saves time, effort and permits you to check over or under-inflation at a glance.

Retail price $1.75 each or $8.00 the set of 5. If you haven't seen Tirometer, write us direct. In ordering specify wood or wire wheels.

Tirometer Valve Corporation of America
Charleston W. Va.

CLEVELAND

FOR THE AUTOMOBILE MANUFACTURER

VARNISHES *and* ENAMELS

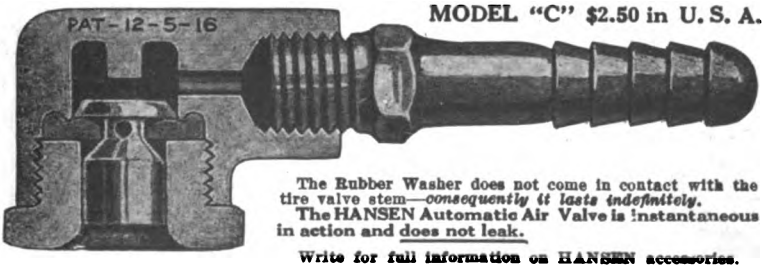
FOR THE AUTOMOBILE ACCESSORY MANUFACTURER

CLEAR = BLACK

THE CLEVELAND VARNISH CO.
CLEVELAND

"HANSEN" AUTOMATIC AIR VALVES

HOSE CLAMPS



MODEL "C" $2.50 in U. S. A.

The Rubber Washer does not come in contact with the tire valve stem—*consequently it lasts indefinitely.*
The HANSEN Automatic Air Valve is instantaneous in action and does not leak.

Write for full information on HANSEN accessories.

AIR DUSTERS

THE HANSEN MFG. COMPANY, CLEVELAND, OHIO

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VARNISHES (Continued)

Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 277.)

Norwesco—See Northwestern Chemical Co.

Nubian Paint & Varnish Co., 1856 LeClaire Ave., Chicago, Ill.

O'Brien Varnish Co., Johnson & Washington Sts., South Bend, Ind.

Panvar Co., Bulletin Bldg., Philadelphia, Pa.

Parrott Varnish Co., 458 N. Washington Ave., Bridgeport, Conn.

Patterson-Sargent Co., E. 33th & St. Clair Sts., Cleveland, O. "B. P. S."

Peerless Mirroroid—See Columbus Varnish Co.

Pratt & Lambert, 79 Tonawanda St., Buffalo, N. Y. "Effecto."

Queen City Varnish Co., Cincinnati, O.

Quickwork—See Standard Varnish Works.

Radium—See Flood & Conklin Co.

Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.

Renu-R-Kote—See Auto Products Mfg. Co.

Royal Varnish Co., Lake Shore Ave., Toledo, O.

Schrack & Co., C., 152 N. Fourth St., Philadelphia, Pa.

Servall—See Willey Co.

Sherwin-Williams Co., 100 Canal St., Cleveland, O.

Smith & Co., Edward, Sixth St. & West Ave., Long Island City, N. Y.

Standard Varnish Works, 90 West St., New York, N. Y. "Quickwork."

Stewart-Mowry Co., 3218 Shields Ave., Chicago, Ill. "Gold Cross."

Tousey Varnish Co., 520 W. 25th St., Chicago, Ill.

Tylastic—See Western Reserve Varnish Co.

Ultra-Blac—See Atlantic Varnish Works.

Valentine & Co., 456 Fourth Ave., New York, N. Y. "Vanadium."

Vanadium—See Valentine & Co.

Vitrolac—See Harrison Works.

Wadsworth, Howland & Co., 141 Federal St., Boston, Mass. "Bay State."

Western Reserve Varnish Co., Cleveland, O. "Tylastic."

Wheeler Varnish Works, 2260 Elston Ave., Chicago, Ill.

Willey Co., C. A., 14th & Hancock Sts., Long Island City, N. Y. "Servall."

Zinsser & Co., W., 195 William St., New York, N. Y. "Bulls-Eye."

VARNISHES, Airplane

Ad-el-ite—See Adams & Elting Co.

Adams & Elting Co., 718-26 Washington Blvd., Chicago, Ill. "Ad-el-ite." (See page 267.)

American Emaillite Co., 549 W. Washington St., Chicago, Ill. "Emaillite."

Beckwith-Chandler Co., 320 Fifth Ave., New York, N. Y.

Berry Bros., 211 Lieb St., Detroit, Mich. "Luxeberry."

Boston Varnish Co. (Everett Sta.), Boston, Mass. "Kyanize."

Brooklyn Varnish Mfg. Co., 35 Nostrand Ave., Brooklyn, N. Y. "Kauri."

Chemical Products Co., 30 Charles River Rd., Cambridge, Mass.

Cleveland Varnish Co., Cleveland, O. (See page 1041.)

Conover Co., C. E., 101 Franklin St., New York, N. Y. "Naiad."

Emaillite—See American Emaillite Co.

Ferdinand & Co., L. W., 152 Kneeland St., Boston, Mass.

Howe Varnish Co., 253 Norman Ave., Brooklyn, N. Y. "Wing-Spar."

Johnston Paint Co., R. F., Pearl & Main Sts., Cincinnati, O.

Kauri—See Brooklyn Varnish Mfg. Co.

Kyanize—See Boston Varnish Co.

Lucas & Co., John, 322-30 Race St., Philadelphia, Pa.

Luxeberry—See Berry Bros.

McDougall-Butler Co., 6 Evans St., Buffalo, N. Y.

Murphy Varnish Co., Chestnut & McWhorter Sts., Newark, N. J.

Naiad—See Conover Co.

National Aeroplane Co., 549 W. Washington St., Chicago, Ill.

Nubian Paint & Varnish Co., 1856 LeClair Ave., Chicago, Ill.

Pratt & Lambert, 75 Tonawanda St., Buffalo, N. Y. "P & L."

P & L—See Pratt & Lambert.

Rexpar—See Sherwin-Williams Co.

Schrack & Co., C., 152 N. Fourth St., Philadelphia, Pa.

Sherwin-Williams Co., 601 Canal Rd., N. W., Cleveland, O. "Rexpar."

Titanine, 2 Rector St., New York, N. Y.

Valentine & Co., 456 Fourth Ave., New York, N. Y. "Valspar."

Valspar—See Valentine & Co.

Wing-Spar—See Howe Varnish Co.

VARNISHES, FOR FORDS—See Paints and Varnishes

VASES, FLOWER—See Holders, Bouquet

VEHICLE MOTION RECORDERS—See Recorders, Vehicle

VELVETS, Upholstery

Collins & Aikman Co., 3-12 E. 34th St., New York, N. Y.

Seaco—See Seamans & Cobb Co.

Seamans & Cobb Co., Boston, Mass. "Seaco." (See page 775.)

VENEER ROOFING—See Panels, Wood

VENTILATING HOOD FASTENERS FOR FORDS — See Fasteners, Ventilating Hood

VENTILATING HOOD HOLDERS FOR FORDS—See Fasteners, Ventilating Hood

VENTILATORS, Cowl

Henvis Co., Garnett J., 1211-15 Filbert St., Philadelphia, Pa.

O'Brien Mfg. Co., Joseph F., 391 Broadway, New York, N. Y.

Petry Co., N. A., 328 N. Randolph St., Philadelphia, Pa.

Polson Mfg. Co., 1750 Main St., Buffalo, N. Y.

Rostand Mfg. Co., Milford, Conn.

Tuckwell, Wm. S., 20 High St., Merrimacport, Mass.

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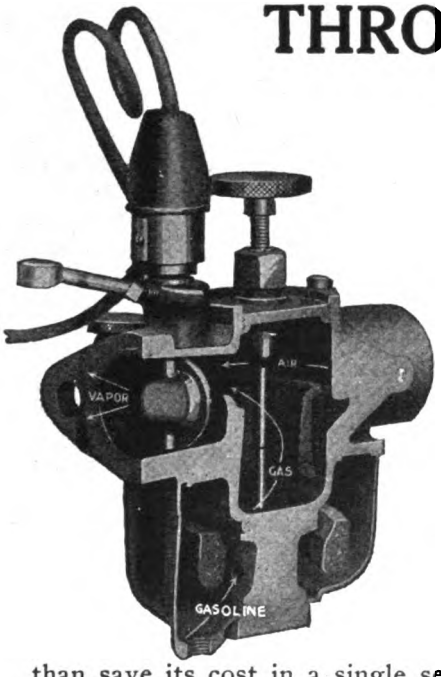
Here is an ideal fuel preheating device

THE ELECTRICALLY HEATED THROTTLE VALVE



This device is a throttle, or "butterfly" valve so constructed that it can be securely placed in any carburetor in thirty minutes time, by anybody. The accompanying illustration shows the valve in place, and shows also the simplicity and effectiveness of its construction.

It will be noted that this valve is placed where it can be most effective. There are many air pre-heating devices on the market, but there is no other effective way in which to pre-heat the actual mixture, after it has been delivered from the venturi tube.

The Electrically Heated Throttle Valve will insure instant starting in zero weather. It will more than save its cost in a single season in giving longer life to the storage battery. It will effect a big saving in fuel, will give increased power and mileage at lower expense.

This valve is going to be one of the biggest of the season's sellers. Made in all sizes, to fit every carburetor—

Price .....$9.00 List

This price includes wire and switch. Heating element carries one-year standard General Electric Company's guarantee.

TO DEALERS:

We believe that this valve will be one of the fastest sellers this season. We have prepared for a big demand, and are doing a large amount of advertising. Interested dealers and jobbers everywhere should get in touch with us at once to see our highly attractive proposition.

Satisfaction or Money Back

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KOKOMO, IND.
U. S. A.

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VENTILATORS, COWL, for Fords

H. & D. Co., Crawfordsville, Ind. (See page 959.)

Petry Co., N. A., 328 N. Randolph St., Philadelphia, Pa.

VENTILATORS, FORE-DOOR—See Ventilators, Limousine

VENTILATORS, Limousine and Fore-Door

Attwood Brass Works, Grand Rapids, Mich. (See page 1195.)

Cowles & Co., C., New Haven, Conn. (See page 651.)

Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.

Long, Charles R. A., 337 S. East St., Indianapolis, Ind.

O'Brien Mfg. Co., Joseph F., 391 Broadway, New York, N. Y.

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

VENTILATORS, Wind Shield

Higgin Mfg. Co., Newport, Ky. "Mac."

Mac—See Higgin Mfg. Co.

Morris Hardware Co., Connellsville, O. "Ventor."

Shurnuff Mfg. Co., 3126 Locust St., St. Louis, Mo.

Ventor—See Morris Hardware Co.

VENTILATORS, Wind Shield, for Fords

Banker Windshield Co., Ellsworth & Negley Aves., Pittsburgh, Pa.

Big B—See Bruening Windshield Co.

Bruening Windshield Co., 1353 Chester Ave., Cleveland, O. "Big B."

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.

Gahm-McCormick Co., 906 E. Main St., Streator, Ill. (See page 1139.)

Gasco—See General Auto Specialty Co.

General Auto Specialty Co., 151 Berkeley St., Boston, Mass. "Gasco."

Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich. "Ospeco."

Motor Products Corporation, 11803 Mack Ave., Detroit, Mich. (See page 857.)

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)

Ospeco—See Michigan Auto Products Co.

Progressive Windshield Co., 1613-23 Wabash Ave., Chicago, Ill.

Richards-Wilcox Mfg. Co., Third St. & C. B. & Q. R. R. Tracks, Aurora, Ill.

VIBRATORS, MASTER—See Coils, Spark

VIBRATORS, Master, for Fords

(See also Coils, Spark)

Connecticut Telephone & Electric Co., Meriden, Conn.

Crowe—See Lisle Mfg. Co.

Fansteel Products Co., North Chicago, Ill. (See page 1029.)

Lisle Mfg. Co., Clarinda, Ia. "Crowe."

New York Coil Co., 338-40 Pearl St., New York, N. Y. "TX."

TX—See New York Coil Co.

Temco Electric Motor Co., 921 Sugar St., Leipsic, O.

VISE STANDS—See Stands, Aircraft Propeller Vise

VISES, Battery

(To hold the battery secure and protect it from damage while withdrawing a cell)

Canedy-Otto Mfg. Co., Chicago Heights, Ill.

VISES, BENCH—See Vises, Machinists'

VISES, Machinists'

Ajax—See Bonney Vise & Tool Works.

Anchor—See Prentiss Vise Co.

Athol Machine Co., Athol, Mass. "Simpson," "Standard."

Barbour-Stockwell Co., 205 Broadway, Cambridgeport, Mass.

Barnett Foundry & Machine Co., Oscar, Lyons Ave. & Cort St., Irvington, N. J. "New Idea."

Bonney Vise & Tool Works, Allentown, Pa. "Hercules," "Ajax," "Champion." (See page 437.)

Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.

Bridgeport Engineering Co., Bridgeport, Conn.

Bull Dog—See Prentiss Vise Co.

Champion—See Western Tool & Mfg. Co.

Champion—See Bonney Vise & Tool Works.

Detroit Garage Equipment Co., 406 E. Jefferson Ave., Detroit, Mich.

Emmert Mfg. Co., W. Main St., Waynesboro, Pa.

Erie Tool Works, 11th & French Sts., Erie, Pa.

F & R—See Fulton Machine & Vise Co.

Fisher & Norris, 37-45 Fair St., Trenton, N. J.

Fulton Machine & Vise Co., Lowville, N. Y. "Star," "Peerless," "F & R."

G-S—See Germanow-Simon Machine Works.

Germanow-Simon Machine Works, 58 Mill St., Rochester, N. Y. "G-S."

Goodell-Pratt Co., Greenfield, Mass.

Hercules—See Bonney Vise & Tool Works.

Hollands Mfg. Co.—See Jonas, C. N. & F. W.

Howard Iron Works, Chicago & Granger Sts., Buffalo, N. Y.

Jarecki Mfg. Co., 149 E. Ninth St., Erie, Pa.

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Hollands Mfg. Co., Erie, Pa.) (See page 688.)

Lewis—See Prentiss Vise Co.

Luther Grinder Mfg. Co., Milwaukee, Wis. (See page 171.)

Monarch—See Prentiss Vise Co.

National Metal Products Co., 1016 E. 11th St., Indianapolis, Ind.

New Britain Machine Co., Chestnut St., New Britain, Conn.

New Idea—See Barnett Foundry & Machine Co.

Parker Co., Charles, 43 Elm St., Meriden, Conn.

Peerless—See Fulton Machine & Vise Co.

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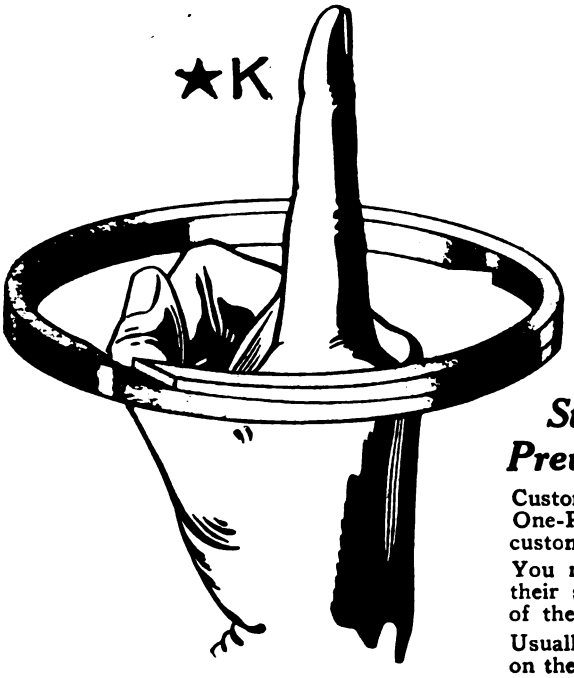
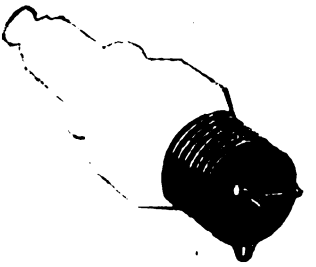




Stark-Inland Rings Prevent "Oil-Pumping"

Customers equipped with Stark-Inland One-Piece Piston Rings are satisfied customers.

You need only tell them to look at their spark plugs for visible evidence of the efficiency of the rings.

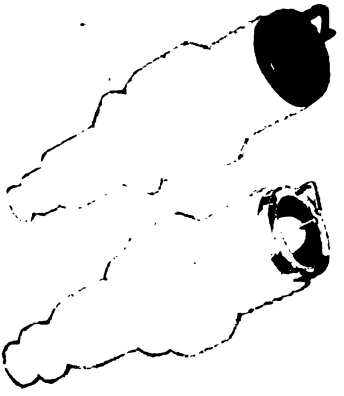
Usually they will find dry, flaky soot on the porcelain of the plug, indicating an overrich mixture.

If the carburetion is correct they will find only the light, reddish deposit which denotes perfect combustion.

Never, unless the cylinders are deeply scored, will they find black, greasy gum caused by leakage of oil into the firing chamber.

This is possible because Stark-Inland Rings are cut spirally in one piece. They uncoil as wear occurs, keeping a snug, tight fit between the piston and the cylinder walls.

Recommend Stark-Inland Rings to your customers. They bring repeat orders and allow you a substantial profit.



STARK-INLAND MACHINE WORKS

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Sterling Bank Bldg., Winnipeg

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INLAND

ONE-PIECE PISTON RING

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VISES, Machinists' (Continued)

Phoenix Hardware Co., 49-53 Illinois St., Buffalo, N. Y.

Prentiss Vise Co., 110 Lafayette St., New York, N. Y. "Anchor," "Bull Dog," "Lewis." "Monarch," "Rapid Transit."

Rapid Transit—See Prentiss Vise Co.

Reed Mfg. Co., W. Eighth St., Erie, Pa.

Rock Island Mfg. Co., Rock Island, Ill. (See page 1061.)

Simpson—See Athol Machine Co.

Standard—See Athol Machine Co.

Star—See Fulton Machine & Vise Co.

Velox Vise Co., Lowville, N. Y.

Ware, J. L., 201 Harvard St., S. E., Minneapolis, Minn.

Western Tool & Mfg. Co., Springfield, O. "Champion."

Yost Mfg. Co., Meadville, Pa. (See page 1047.)

VISES, Pipe

Armstrong Mfg. Co., 335 Knowlton St., Bridgeport, Conn.

Athol Machine Co., Athol, Mass.

Blake—See Prentiss Vise Co.

Dikeman Mfg. Co., Merwin St., Norwalk, Conn.

Efficient Vise & Wrench Co., 4207 Clark Ave., Cleveland, O.

Erie Tool Works, 11th & French Sts., Erie, Pa.

Fisher & Norris, 37-45 Fair St., Trenton, N. J.

Greenfield Tap & Die Corp., Greenfield, Mass. (See page 927.)

Ideal—See Orange Machine & Mfg. Co.

Magic—See Prentiss Vise Co.

Mark Mfg. Co., 111 W. Washington St., Chicago, Ill.

Monarch—See Prentiss Vise Co.

Orange Machine & Mfg. Co., 280 S. Jefferson St., Orange, N. J. "Ideal."

Oswego Tool Co., 119-27 W. First St., Oswego, N. Y.

Parker Co., Charles, 48 Elm St., Meriden, Conn.

Phoenix Hardware Co., 49-53 Illinois St., Buffalo, N. Y.

Prentiss Vise Co., 110 Lafayette St., New York, N. Y. "Blake," "Monarch," "Rex," "20th Century," "Shepard," "Magic."

Reed Mfg. Co., W. Eighth St., Erie, Pa.

Rex—See Prentiss Vise Co.

Rock Island Mfg. Co., Rock Island, Ill. (See page 1061.)

Saunders Sons, D., 27 Atherton St., Yonkers, N. Y.

Shepard—See Prentiss Vise Co.

20th Century—See Prentiss Vise Co.

Williams & Co., J. H., 88 Richards St., Brooklyn, N. Y. (See page 1081.)

Yost Mfg. Co., Meadville, Pa. (See page 1047.)

VISES, Piston, for Fords

Auto Mechanics Tool Co., 2501 S. Washington St., Peoria, Ill. "Peoria."

Auto Metal Parts Co., 624 Michigan Ave., Chicago, Ill.

Carswell-Hammond Mfg. Co.—See Zinke Co.

Continental Auto Parts Co., 1807 E. 17th St., Columbus, Ind. (See page 419.)

Dearborn Equipment Co., Kalamazoo, Mich. (See page 403.)

Dee Tool Co., John, Rock Island, Ill.

Danielson Tool Co., Fulton St., Wausau, Wis.

Detroit Garage Equipment Co., 406 E. Jefferson Ave., Detroit, Mich.

Garage Equipment Co., 241 Fourth Ave., S., Minneapolis, Minn.

Liberty Metal Products Co., Front St., & First Ave., Berea, O.

Littell Machinery Co., 532-34 Washington St., Spokane, Wash.

Miles Mfg. Co.—See Zinke Co.

Peoria—See Auto Mechanics Tool Co.

Railway Specialty Co., Atchison, Kans. "Rysco."

Rysco—See Railway Specialty Co.

Storm Mfg. Co., Dept. L, Minneapolis, Minn. (See page 983.)

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Carswell-Hammond Mfg. Co., Boone, Ia.; also Miles Mfg. Co., Newton, Ia.) (See page 313.)

VISES, Portable

Autovise—See Rock Island Mfg. Co.

Bonney Vise & Tool Works, Allentown, Pa. "Champion," "Standard." (See page 437.)

Champion—See Bonney Vise & Tool Works.

F & R—See Fulton Machine & Vise Co.

Fulton Machine & Vise Co., Lowville, N. Y. "F & R."

Parker Co., Charles, 48 Elm St., Meriden, Conn.

Rock Island Mfg. Co., Rock Island, Ill. "Autovise." (See page 1061.)

Standard—See Bonney Vise & Tool Works.

VISES, TRANSMISSION DRUM REPAIRING FOR FORDS—See Clamps or Vises Transmission Drum Repairing

VISORS and RAIN SHIELDS, Top

(Leather or fabric strip to attach to top to close up space between top and windshield; for Windshield Visors—See Shields, Sun and Rain.)

A. & E. Auto Top Co., 33-36 E. Cross St., Ypsilanti, Mich. (See page 335.)

Albany Machine Tool Co.—See Cassidy Co.

Big B—See Bruening Windshield Co.

Bondy Windshield Deflector Co., 5101 Carnegie Ave., Cleveland, O.

Bruening Windshield Co., 1353 Chester Ave., Cleveland, O. "Big B."

Cassidy Co., Inc., Edward A., 23 W. 42d St., New York, N. Y. (Sales Department for Albany Machine Tool Co., Albany, N. Y. "Ramsey." (See page 87.)

Eclipse—See Lonney & Carmichael.

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. "Toptex." (See pages 174 and 175.)

Laughlin & Schuler, Kimball Bldg., Chicago, Ill.

Lonney & Carmichael, 4835 Woodward Ave., Detroit, Mich. "Eclipse." (See page 1167.)

Martin Auto Specialty Co., 31 Forest Road Ave., Lancaster, O.

Nathan Novelty Mfg. Co., 56 Fifth Ave., New York, N. Y. (See page 321.)

National—See Hillman Mfg. Co.

Ramsey—See Cassidy Co.

Road-View—See Smith & Co.

Simon & Co., S. C., 325 N. Second St., Philadelphia, Pa.

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich. "Road-View."

Thomas Auto Top Co., 417 E. Jackson St., Muncie, Ind.

Toptex—See Gemco Mfg. Co.

Williams Mfg. Co., 125 W. 35th St., Los Angeles, Cal.

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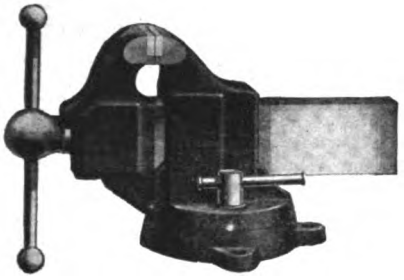

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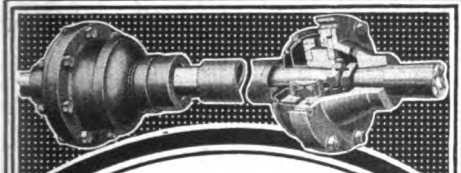

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Acorn Buggy Co., 500 Eggleston Ave., Cincinnati, O.

American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "3A."

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 321.)

Buettner Co., Charles H., Cincinnati, O.

Buob & Scheu, 500-10 Webster St., Cincinnati, O. (See page 325.)

Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.

Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.

Economy Seat Co., 3132-36 S. Canal St., Chicago, Ill. "Esco."

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 545.)

Esco—See Economy Seat Co.

Fitzwell—See Niagara Fabric Mfg. Co.

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. "Toptex." (See pages 174 and 175.)

Gordon Co., J. P., 555 N. Fourth St., Columbus, O. (See page 319.)

Hodes-Zink Mfg. Co., 312 W. State St., Fremont, O.

Kozy-Kar—See Stephens Rubber Co.

Lockwood Mfg. Co., Kansas City, Mo. (See page 323.)

Monarch Carriage Goods Co., Cincinnati, O. (See page 407.)

Niagara Fabric Mfg. Co., 47 Green St., New York, N. Y. "Fitzwell."

Omaha Auto Top Co., 709-11 S. 15th St., Omaha, Neb.

Perkins-Campbell Co., 622-26 Broadway, Cincinnati, O. (See page 317.)

Powers Mfg. Co., Waterloo, Ia. (See page 593.)

R-E—See Roose Mfg. Co.

Roose Mfg. Co., 327-33 W. Main St., Louisville, Ky. "R-E." (See pages 129, 151, 325 and 327.)

Simon & Co., S. C., 325 N. Second St., Philadelphia, Pa.

Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo. "Kozy-Kar."

3A—See American Automobile Accessories Co.

Toptex—See Gemco Mfg. Co.

VISORS, SUN—See Visors, Sun and Rain

VISORS, TOP—See Visors and Rainshields, Top

VISORS, WINDSHIELD—See Visors, Sun and Rain

VOLTMETERS — See Ammeters; also Gages, Battery

VULCANIZER STEAM PRESSURE CONTROLLERS—See Controllers, Vulcanizer Steam Pressure

VULCANIZER THERMOMETERS — See Thermometers, Vulcanizer

VULCANIZER TOOLS—See Tools, Tire Vulcanizing

VULCANIZERS, Portable

Adamson Mfg. Co., East Palestine, O.

Arsco Mfg. Co., 902 Albany St., Schenectady, N. Y.

Canton, Co., A. S., 174 Franklin St., New York, N. Y.

Champion, F. M., 14-16 Elizabeth St., Utica, N. Y.

Continental Auto Parts Co., 1807 E. 17th St., Columbus, O. (See page 419.)

Dunn Mfg. Co., A. C., 1118-26 Third Ave., S., Minneapolis, Minn.

Eleck-Trick—See Gibney Tire & Rubber Co.

Exhaust Heater Vulcanizer Co., Altoona, Pa.

5-Minute—See Shaler Co.

G. A. C.—See General Appliance Co.

General Appliance Co., 100 Boylston St., Boston, Mass. "G. A. C."

Gibney Tire & Rubber Co., Conshohocken, Pa. "Eleck-Trick."

Gwynn-Bacon Vulcanizer Co., 2504 Cass Ave., St. Louis, Mo.

Horsey Products Co., 4815 Lexington Ave., Cleveland, O. (See page 1049.)

Hubbell Tire & Rubber Co., 6545 Carnegie Ave., Cleveland, O.

Ideal Clamp Mfg. Co., 198-202 Bradford St., Brooklyn, N. Y. (See page 241.)

Its-It—See Premier Electric Co.

Junior—See Cleveland Auto Specialty Co.

Lazarus Mfg. Co., 224 High St., Cleveland, O. "Two-in-one."

Magic Auto Devices Co., Lynbrook, N. Y.

Marvel Accessories Mfg. Co., 1220 W. Sixth St., Cleveland, O.

Meiser & Co., G. H., 6323 S. Chicago Ave., Chicago, Ill. "Quick Action."

Midway Mechanical Co., St. Paul, Minn. (See page 667.)

Miller, Chas. E., 1400 S. Meridian St., Anderson, Ind.

Milwaukee Auto Specialty Mfg. Co., 705-15 Chestnut St., Milwaukee, Wis. "Radio."

National Rubber & Specialties Co., 4433-39 Chickering Ave., Cincinnati, O. "Vulcar."

Peckstein Iron Works, Keokuk, Iowa. "P. I. W."

Perfection—See Sterling Specialty Mfg. Co.

P. I. W.—Peckstein Iron Works.

Pollak Tool & Stamping Co., Joseph, 31-35 Freeport St., Boston, Mass.

Premier Electric Co., 3800-10 Ravenswood Ave., Chicago, Ill. "Its-It."

Quick Action—See Meiser & Co.

Radio—See Milwaukee Auto Specialty Co.

Risk's Riskless Vulcanizer Co., Plymouth Bldg., Minneapolis, Minn.

Safety Vulcanizer Mfg. Co., Brown & Jefferson Sts., Waupun, Wis.

Shaler Co., C. A., 904 Fourth St., Waupun, Wis. "Vul-Kit," "5-Minute." (See pages 359, 1049 and 1051.)

Sterling Specialty Mfg. Co., 119 Verplanx St., Buffalo, N. Y. "Perfection."

Super-Vulcanizer Mfg. Co., 146 South West Temple St., Salt Lake City, Utah. (See page 1049.)

Swain, C. E., 360 N. Virgil Ave., Los Angeles, Cal.

Tong-em-on Vulcanizer Co., Plymouth Bldg., Minneapolis, Minn.

Two-in-one—See Lazarus Mfg. Co.

Utility Tire Machinery Co., 401 Penn Ave., Joplin, Mo.

V Air Valve & Mfg. Co., 1648 Tremont St., Denver, Colo.

Vul-Kit—See Shaler Co.

Vulcar—See National Rubber & Specialties Co.

Westinghouse Electric & Mfg. Co., 82 Worthington St., Springfield, Mass. (See pages 940 and 941.)

Wheeling Stove & Range Co., 36 19th St., Wheeling, W. Va.

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Canton, Co., A. S., 174 Franklin St., New York, N. Y.
Exhaust Heater Vulcanizer Co., Altoona, Pa.
Horsey Products Co., 4815 Lexington Ave., Cleveland, O. (See page 1049.)
Larazus Mfg. Co., 224 High St., Cleveland, O. "Two-in-one."
Magic Auto Devices Co., Lynbrook, N. Y.
Marvel Accessories Mfg. Co., 1220 W. Sixth St., Cleveland, O.
Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y.
Shaler Co., C. A., 904 Fourth St., Waupun, Wis. (See pages 359, 1049 and 1051.)
Two-in-one—See Lazarus Mfg. Co.

VULCANIZERS, Shop

Acme Supply Co., 112 Dexter St., Ionia, Mich.
Adams-Barre Co., 1242 N. High St., Columbus, O.
Akron Rubber Mold & Machine Co., 917 Sweitzer Ave., Akron, O. "Tip-Top."
Akron-Williams—See Williams Foundry & Machine Co.
Allen—See Diamond Mfg. Co.
Altenburg Tire Equipment Co., Davenport, Ia.
Anderson Steam Vulcanizer Co., 365 Woodward Ave., Indianapolis, Ind.
Arthur Vulcanizing Machine Co., Griswold St., Warren, O.
Auto-Tire Vulcanizing Co., 140 Powell St., Lowell, Mass. "Lowell."
Bacon Vulcanizer Mfg. Co., 4065 Hollis St., Oakland, Cal.
Badger—See Tire Repair Equipment Co.
Biggs Boiler Works Co., 1007 Bank St., Akron, O.
Brown Mfg. Co., Jesse F., 2652 Long Beach Ave., Los Angeles, Cal.
Burge Machine Works, 218-30 N. Jefferson St., Chicago, Ill. "Excelsior."
Diamond Mfg. Co., Des Moines, Ia. "Allen."
Dri-Kure-Retreder—See Western Vulcanizer Mfg. Co.
Duncan Co., F. M., 114 E. Ohio St., Chicago, Ill.
Excelsior—See Burge Machine Works.
Globe Machine & Stamping Co., 1200-50 W. 76th St., Cleveland, O. "Sepco." (See page 1049.)
Harkins Machine Co., T. L., 46 Farnsworth St., Boston, Mass.
Hayner—See Mason Mfg. Co.
Haywood Tire & Equipment Co., 1230 N. Capitol Ave., Indianapolis, Ind.
Heintz & Co., James C., 1319 Main Ave., Cleveland, O.
Hibbs Rubber Co., 200 S. Boaz St., Fort Worth, Tex.
Jim Dandy—See Scheffer & Rossum Co.
Legnard Co., A. B., Dept 14, Waukegan, Ill. "Vulcan." (See page 649.)
Lowell—See Auto-Tire Vulcanizing Co.
Marvel Accessories Mfg. Co., 1220 W. Sixth St., Cleveland, O.
Mason Mfg. Co., Mason, Mich. "Hayner."
Miller, Chas. E., 1400 S. Meridian St., Anderson, Ind.
Milwaukee Auto Specialty Mfg. Co., 705-15 Chestnut St., Milwaukee, Wis. "Radium."
National Rubber Mold Co., 2763 Blake St., Denver, Colo.
O'Neil Tire & Rubber Co., 350-54 Bowery St., Akron, O.
Phoenix Tire & Rubber Co., 1614 S. Michigan Ave., Chicago, Ill.
Progressive Mfg. Co., 468 64th Ave., West Allis, Wis.
Radium—See Milwaukee Auto Specialty Co.
Redex—See Rubber Products & Machinery Co.
Reliance Mfg. Co., Broadway & Glenarm St., Pasadena, Cal.
Rubber Products & Machinery Co., 225 E. Ninth St., Los Angeles, Cal. "Redex."
Scheffer & Rossum Co., 104-08 E. Tenth St., St. Paul, Minn. "Jim Dandy."
Sapco—See Globe Machine & Stamping Co.
Shaler Co., C. A. 904 Fourth St., Waupun, Wis. (See pages 359, 1049 and 1051.)
Soper Vulcanizer Mfg. Co., 110 E. 11th St., Los Angeles, Cal.
Sunlite Co., McKinney, Tex.
Tin-Top—See Akron Rubber Mold & Machine Co.
Tire Repair Equipment Co., 732 College Ave., Appleton, Wis. "Badger."
Vanderpool Vulcanizing Co., 723 W. Mulberry St., Springfield, O.
Vulcan—See Legnard Co.
Western Rubber Mold Co., 243 N. Crawford Ave., Chicago, Ill. (See page 647.)
Western Vulcanizer Mfg. Co., 150 N. Desplaines St., Chicago, Ill. "Dri-Kure-Retreder."
Wheeling Stove & Range Co., 86 Tenth St., Wheeling, W. Va.
Wilkinson-Beaver Mfg. Co., St. Louis, Mo. (See page 647.)
Willey, Chas. A., 338-40 W. Main St., Battle Creek, Mich.
Williams Foundry & Machine Co., 100 Walnut St., Akron, O. "Akron-Williams."
Wood-Craft Co., 1486 Marshall Ave., St. Paul, Minn.
Zwebell Bros. Co., 482 Milwaukee St., Milwaukee, Wis.

VULCANIZING CEMENT—See Cement, Tire Repair

VULCANIZING COMPOUNDS—See Compounds, Tire Repair

VULCANIZING CORES—See Molds, Tire Vulcanizing

VULCANIZING MOLDS—See Molds, Tire Vulcanizing

VULCANIZING TOOLS, TIRE—See Tools, Tire Vulcanizing

WARMERS, Electric Foot

(For Electric and Exhaust Heaters—See Heaters, Automobile)

Merritt Electric Co., 49 E. 21st St., New York, N. Y.

WARMERS, Hand

(Electric heating devices to attach to Steering Wheel.)

Comfort—See Hainert & Son.
Comfy-Drives—See Main Electric Co.
Globe Machine & Stamping Co., 1200-50 W. 76th St., Cleveland, O. (See page 1049.)
Hainert & Son, F. H., 3043 Nicollet Ave, Minneapolis, Minn. "Comfort."
Hold-Heat—See Russell Electric Co.
Ieco Steerwarms—See Interstate Electric Co.
Interstate Electric Co., Baronne & Perdido Sts., New Orleans, La. "Ieco Steerwarms."
Main Electric Co., Cleveland, O. "Comfy-Drives."
Neverout—See Rose Mfg. Co.

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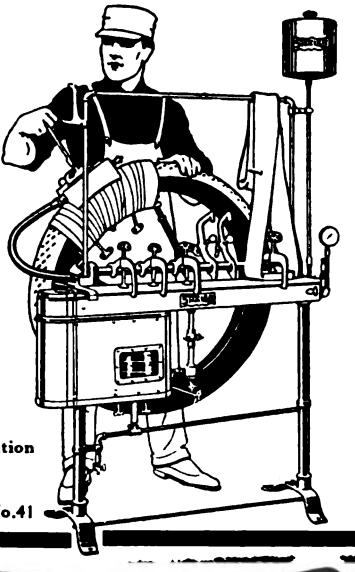

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WARMERS, Hand (Continued)

Rose Mfg. Co., 910 Arch St., Philadelphia, Pa. "Never-out." (See page 711.)

Russell Electric Co., 140 W. Austin Ave., Chicago, Ill. "Hold-Heat."

WASH APRONS—See Aprons, Wash

WASH STAND LIGHTS—See Lights, Wash Stand

WASHER CUTTERS—See Cutters, Washer or Gasket

WASHER PUNCHES—See Punches, Arch and Washer

WASHERS, AIR—See Cleaners, Air

WASHERS, Brass and Copper

American Brass Co., Waterbury, Conn. (See page 165.)

Bridgeport Brass Co., Bridgeport, Conn. (See page 907.)

Massachusetts Machine Shop, 817 Albany St., Boston, Mass. (See page 1061.)

Plume & Atwood Manufacturing Co., Waterbury, Conn.

Rome Brass & Copper Co., Rome, N. Y.

Steele & Johnson Manufacturing Co., Waterbury, Conn.

Waterbury Manufacturing Co., Waterbury, Conn.

WASHERS, CAR—See Washers, Vehicle

WASHERS, COPPER—See Washers, Brass and Copper

WASHERS, Cork

Acco—See Armstrong Cork Co.

Advance Felt & Cutting Co., 315E S. Jefferson St., Chicago, Ill. (See page 411.)

Armstrong Cork Co., 124 23rd St., Pittsburgh, Pa. "Acco." (See page 449.)

Compressed Cork Co., Ossining, N. Y. (See page 675.)

Diamond Cork Co., 59 Pearl St., New York, N. Y.

Field & Co., R. B., Worcester, Mass. "Fieldco." (See page 1055.)

Fieldco—See Field & Co.

Gasket Supply Co., 1728 Ludlow St., Philadelphia, Pa. "Right." (See page 447.)

Mundet & Son, L., King, Ferris & Sullivan Sts., Brooklyn, N. Y.

Paddock Cork Co., 1209-17 De Kalb Ave., Brooklyn, N. Y. (See page 301.)

Right—See Gasket Supply Co.

Spanish-American Cork & Specialty Co. (Westport), Baltimore, Md.

WASHERS, Felt

(For Sheet Felt—See Felt, Sheet)

Advance Felt & Cutting Co., 315E S. Jefferson St., Chicago, Ill. (See page 411.)

American Felt Co., 100 Summer St., Boston, Mass. (See page 411.)

Atlantic Felt Cutting Co., 93rd St. & Fourth Ave., Brooklyn, N. Y. (See page 413.)

Auburn Leather Goods Co., 8 Miller St., Auburn, N. Y.

Booth Felt Co., 463-73 19th St., Brooklyn, N. Y. (See pages 409 and 410.)

Braunsdorf, Geo. W., 430 E. 53d St., New York, N. Y.

Brawley, T. R., 275-77 20th St., Brooklyn, N. Y. (See pages 411 and 1053.)

Excelsior Leather Washer Mfg. Co., Rockford, Ill. "X. L." (See page 1053.)

Fargo Felt Cutting Corp., 25 Cooper Sq., New York, N. Y.

Felt Products Mfg. Co., 2419 W. 14th St., Chicago, Ill.

Felters Co., Millbury, Mass. (See page 649.)

Field & Co., R. B., Worcester, Mass. "Fieldco." (See page 1055.)

Fieldco—See Field & Co.

Gasket Supply Co., 1728 Ludlow St., Philadelphia, Pa. "Right." (See page 447.)

House & Sons, Chas. W., Unionville, Conn.

Lyons Felt Co., Dept. A., 338 Myrtle Ave., Brooklyn, N. Y. (See page 475.)

Rhocom—See Rhodes & Co.

Rhodes & Co., James H., 513 W. Austin Ave., Chicago, Ill. "Rhocom."

Right—See Gasket Supply Co.

Standard Felt Co., West Alhambra, Cal.

Star Felt Cutting Co., 260 69th St., Brooklyn, N. Y.

Sutherland Co., F. L., 139 Beaubien St., Detroit, Mich. (See page 803.)

X. L.—See Excelsior Leather Washer Mfg. Co.

Western Felt Works, 4115-33 Ogden Ave., Chicago, Ill. (See page 1055.)

WASHERS, FELT, FOR FORDS—See Gaskets, Felt

WASHERS, FIBRE—See Fibre, Hard

WASHERS, Finishing

Gasket Supply Co., 1728 Ludlow St., Philadelphia, Pa. "Right." (See page 447.)

Massachusetts Machine Shop, 817 Albany St., Boston, Mass. (See page 1061.)

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn.

Read & Co., A. P., 568 W. Washington St., Chicago, Ill.

Right—See Gasket Supply Co.

Stanley Works, New Britain, Conn. (See page 499.)

WASHERS, Iron and Steel

American Iron & Steel Mfg. Co., Front & Cumberland Sts., Lebanon, Pa.

Barkelew Metal Products Co., Richard & Bowen Sts., Dayton O. (See page 657.)

Bettcher Mfg. Co., 58th St. & P. C. R. R., Cleveland, O.

Bossert Corp., Utica, N. Y. (See page 897.)

Clark Bros. Bolt Co., Milldale, Conn.

Cleveland Wrought Products Co., W. 58th St., South of Dennison Ave., Cleveland, O. (See page 875.)

Columbus Bolt Works Co., Columbus, O. (See page 155.)

Die Products Mfg. Co., 11 St. Marys St., Dayton, O.

Diebel, A. J., 976 Woodward Ave., Detroit, Mich. (Michigan, Indiana and Ohio Distributors for Barkelew Washers.) (See page 543.)

Gasket Supply Co., 1728 Ludlow St., Philadelphia, Pa. "Right." (See page 447.)

Hoefeld & Co., R., Buffalo, N. Y.

Hubbard Spring Mfg. Co., Pontiac, Mich. (See page 957.)

Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill. (See page 915.)

Kales Stamping Co., 1663 W. Lafayette Blvd., Detroit, Mich. (See page 641.)

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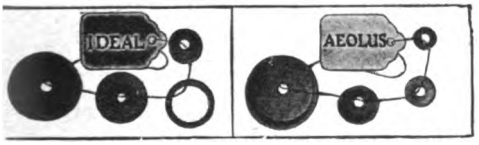
X-L BRAND
Leather Washers

NOTE TO TRADE

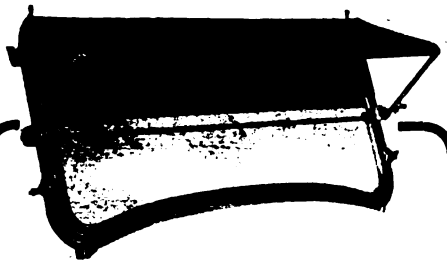
We are specialists in this line and are prepared to fill your order for any quantity. Estimates furnished on any kind of fibre, paper, felt or leather washers—also on leather specialty work of all kinds.

We manufacture complete tire pump sets. Write us for list.



EXCELSIOR LEATHER WASHER MFG. CO.

ROCKFORD ILLINOIS



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The One Shield Which Does the Work

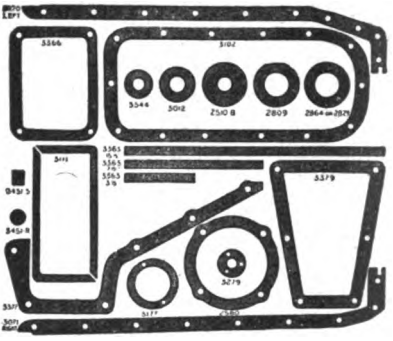
Shuts out blinding sunlight instead of feebly modifying it as colored glass does. Prevents eye strain. Made of selected top material. Adjusted to any position in a few seconds. Locks rigidly—no flap, no rattle. When not in use rolls neatly up under auto top. Two standard sizes will fit 90% of cars.

The Big Selling Accessory for 1921

Dealers—Cash in on our advertising and live sales helps. Write for full information at once. Jobbers in all distributing centers will supply the trade.

HAMILTON PRODUCTS CO.
413-423 S. 5th St., Minneapolis, Minn.

SET No. 1



FELT WASHERS
and
GASKETS

For Ford Cars

The gaskets comprising the set illustrated above are made from a quality felt found to be best adapted to the purpose, and of the proper thickness. Sold in lots of 100 and upward. Send for our price list on loose gaskets.

FELT WASHERS

Felt Washer Set for Fords

This set makes it possible for the dealer to stock Ford Washers without the customary stock loss and untidy washer bin. Sold in Cartons of 300 sets.

Sheet Felt

A complete line of sheet felt of all qualities is carried in stock. This merchandise is convenient for special work, such as padding, home-made washers, etc.

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FELT SPECIALTIES
275-277 20th Street Brooklyn, N. Y.

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WASHERS, Iron and Steel (Continued)

Massachusetts Machine Shop, 817 Albany St., Boston, Mass. (See page 1061.)

New England Bolt & Steel Co., Bowdoin St., (Everett), Boston, Mass.

Pittsburg Screw & Bolt Co., Preble Ave., (N. S.), Pittsburgh, Pa.

Quadriga Mfg. Co., 213-21 W. Grand Ave., Chicago, Ill.

Reliance Mfg. Co., Massillon, O. (See page 1061.)

Republic Iron & Steel Co., Republic Bldg., Youngstown, O.

Right—See Gasket Supply Co.

Sessions & Son, J. H., Bristol, Conn.

Smith Co., Thomas, 13 Cypress St., Worcester, Mass.

Stanley Works, New Britain, Conn. (See page 499.)

Steele & Johnson Mfg. Co., 779 S. Main St., Waterbury, Conn.

Upson Nut Co., Unionville, Conn.

Worcester Stamped Metal Co., Worcester, Mass. (See page 1019.)

Wrought Washer Mfg. Co., 46 S. Bay St., Milwaukee, Wis.

WASHERS, Leather

Algco—See Auburn Leather Goods Co.

Auburn Leather Goods Co., 8 Miller St., Auburn, N. Y. "Algco."

Chicago Rawhide Co., 1301 Elston Ave., Chicago, Ill.

Detroit Leather Works, 863 E. Lafayette Blvd., Detroit, Mich. (See page 125.)

Duckwall Belting & Hose Co., 201-05 N. West St., Indianapolis, Ind. (See page 637.)

Evans-Lawrie Co., 708-10 Beacon St., Boston, Mass. (Eastern Distributors for "G & K" Washers.) (See page 125.)

Excelsior Leather Washer Mfg. Co., Rockford, Ill. "X. L." (See page 1053.)

Field & Co., R. B., Worcester, Mass. "Fieldco." (See page 1055.)

Fieldco—See Field & Co.

G. & K.—See Graton & Knight Mfg. Co.

Gasket Supply Co., 1728 Ludlow St., Philadelphia, Pa. "Right." (See page 447.)

General Tanning Corp., Chester, Mt. Vernon & Medborn Aves., Irvington, N. J.

Graton & Knight Mfg. Co., Worcester, Mass "G. & K." (See page 119.)

Hide Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind. (See page 121.)

Hoefeld & Co., R., 61-69 Carroll St., Buffalo, N. Y.

Hunt Co., Henry C., 261 Franklin St., Boston, Mass. (See page 117.)

Judd & Leland Mfg. Co., Clifton Springs, N. Y. (See page 745.)

Kendrick Valve & Washer Co., 313 E. Water St., Syracuse, N. Y.

Leather Parts Co., 1619-21 Prospect St., Indianapolis, Ind.

Marsh Co., Charles W., 37 Hudson St., Muskegon, Mich.

Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.

Right—See Gasket Supply Co.

Simco—See Simplex Mfg. Co.

Simplex Mfg. Co., Auburn, N. Y. "Simco."

Sutherland Co., F. L., 139 Beaubien St., Detroit, Mich. (See page 803.)

X. L.—See Excelsior Leather Washer Mfg. Co.

WASHERS, LOCK—See Nuts, Lock

WASHERS, MICA—See Mica

WASHERS, OVERHEAD—See Washers, Vehicle

WASHERS, PUMP—See Washers, Leather; also Washers, Tire Pump

WASHERS, RUBBER—See Rubber, Hard

WASHERS, SPRING—See Washers, Steel Spring

WASHERS, STEEL—See Washers, Iron and Steel

WASHERS, Steel Spring

Barnes Co., Wallace, Bristol, Conn. (See page 887.)

Hobbs Mfg. Co., 26 Salisbury St., Worcester, Mass.

Positive Lock Washer Co., Newark, N. J. (See page 1061.)

WASHERS, Tire Pump Connection

Romort Mfg. Co.—See Zinke Co.

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Romort Mfg. Co., Oakfield, Wis.) (See pages 310 and 311.)

WASHERS, Tufting

Robertson Steel & Iron Co., W. F., Elm & Commerce Sts., Cincinnati, O.

WASHERS, Vehicle

American Textile Mfg. Co., Cleveland, O. "No-Mar."

Arkaco—See Rennous, Kleinle & Co.

Binks—See Star Brass Works.

Boston Auto-Washer Co., 286 Commercial St., Boston, Mass.

Cataract Auto & Vehicle Washer Co., 1269 Western Ave., Topeka, Kans. (See page 1057.)

Crescent Washing Machine Co., 847 Larrabee St., Chicago, Ill.

Davis, Milton E., Canastota, N. Y. "Wizard."

Everready—See Smith Mfg. Co.

Fitsit—See Rennous, Kleinle & Co.

Fuller Brush Co., 74 Union Pl., Hartford, Conn.

Hahn, Arthur W., 1-7 Dominick St., New York, N. Y.

Heaney Mfg. Co., 10-12 India Sq., Boston, Mass.

Hecla—See Mooers-Wright Co.

Hicks Brush Co., Howard A., 626 18th St., Denver, Colo.

Hygenia Brush Co., Worcester, Mass. "Ideal." (See page 1063.)

Ideal—See Hygenia Brush Co.

Irving—See Smith Mfg. Co.

Lampkin, Walter L., 921 Walnut St., Kansas City, Mo.

Mooers-Wright Co., 1400 Broadway, New York, N. Y. (Factory Sales Agents for U. S. Specialty Co., Boston, Mass. "Hecla.")

Muller, Edward, 5031 Hudson Bld., West New York, N. J. "Reliable."

No-Mar—See American Textile Mfg. Co.

North Ridge Brush Co., 252 Clark St., Freeport, Ill.

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Pump Leathers in Sets for Tire Pumps a Specialty

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R. B. FIELD & COMPANY, Worcester, Mass.

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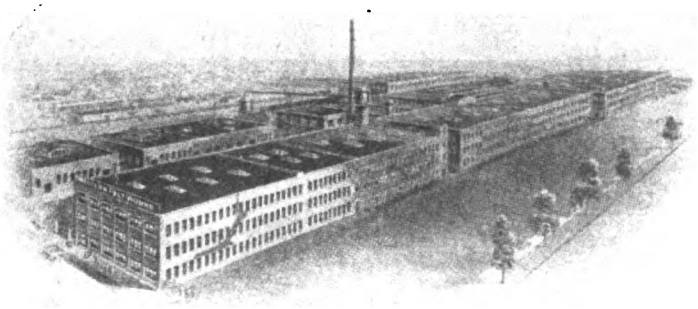

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New York Office: 42-44 East 20th Street Detroit Office: Union Trust Building

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WASHERS, Vehicle (Continued)

O. K.—See Rippley Mfg. Co.

Osborne Mfg. Co., 5401 Hamilton Ave., N. E., Cleveland, O.

Peerless—See Tempco Mfg. Co.

Perfection—See Ryan & Long.

Raban, W. A., Broad St., Port Chester, N. Y. "Westchester."

Reliable—See Muller, Edward.

Rennous, Kleinle & Co., 2321 Frederick Ave., Baltimore, Md. "Arkaco," "Fitsit."

Rhodes De Luxe—See Vehicle Specialty Co.

Rhodes Excelsior—See Vehicle Specialty Co.

Rhodes Superior—See Vehicle Specialty Co.

Rich Mfg. Co., 1777 Broadway, New York, N. Y. "Rico." (See page 1223.)

Rico—See Rich Mfg. Co.

Rippley Mfg. Co., Grafton, Ill. "O. K."

Ryan & Long, 842 College Ave., Appleton, Wis. "Perfection."

Sanitax Brush Co., 2235 S. Wabash Ave., Chicago, Ill.

Scully-Jones & Co., 30 E. Jackson St., Chicago, Ill.

Smith Mfg. Co., I. J., 1007 Ave. Q, Brooklyn, N. Y. "Irving," "Everready."

Smith & Co., Jos. N., 2461 E. Grand Blvd., Detroit, Mich.

Star Brass Works, 3120 Carroll Ave., Chicago, Ill. "Binks."

Tempco Mfg. Co., 2227 Ogden Ave., Chicago, Ill. "Peerless."

Turbine Auto Washer Co., Three Rivers, Mich.

U. S. Specialty Co.—See Mooers-Wright Co.

Vehicle Specialty Co., 51 Oak St., Hartford, Conn. "Rhodes De Luxe," "Rhodes Excelsior," "Rhodes Superior." (See page 1057.)

Westchester—See Raban, W. A.

Whiting—J. J. Adams Co., John L., Boston, Mass. (See page 171.)

Wizard—See Davis, Milton E.

WASHING BRUSHES—See Washers, Vehicle

WASTE CANS—See Cans, Waste

WASTE, Cotton

(For wiping rags—See Wipers)

American Manufacturers Supply Co., 1401-15 Orleans St., Detroit, Mich.

Autopak—Royal Mfg. Co.

Basco—See Baylis Sanitary Supply Co.

Baylis Sanitary Supply Co., 341 W. Superior St., Chicago, Ill. "Basco."

Bishop Mfg. Co., Robert, 157 W. Sixth St. (S. Boston), Boston, Mass.

Blakeley & Son, John, 1059 Germantown Ave., Philadelphia, Pa.

Chicago Sanitary Rag Co., 2137-43 S. Loomis St., Chicago, Ill.

Dumee Son & Co., 105-07 S. Third St., Philadelphia, Pa.

Egan Waste Co., 19 Burling Slip, New York, N. Y.

Empire Waste Corp., Stevens Bldg., Detroit, Mich.

Estes Mills, Fall River, Mass.

Fidelity—See Hagy Waste Works.

Fulton Bag & Cotton Mills, 330 Wythe Ave., Brooklyn, N. Y.

Gross & Co., E., 90-96 Avon St., Hartford, Conn.

Hagy & Son, Clayton L., 16th & Carpenter Sts., Philadelphia, Pa.

Hagy Waste Works, J. Milton, Philadelphia, Pa. "Fidelity." (See page 695.)

Hoffman-Corr Mfg. Co., 318 Lafayette St., New York, N. Y.

Interwoven Mills, Martinsburg, W. Va.

Kanned Kotton—See Tepee Waste Co.

Masco—See Massasoit Mfg. Co.

Massasoit Mfg. Co., 134 Pocasset St., Fall River, Mass. "Masco."

Mill Remnants Co., 19 Bond St., New York, N. Y.

Mooers-Wright Co., 1400 Broadway, New York, N. Y. (Factory Sales Agents for Union Wadding Co., Pawtucket, R. I.) (See page 1167.)

Phillips, C. F., Little Bldg., Lincoln, Neb.

Red-Roll—See Union Wadding Co.

Riverside Mills, Kollock & Tatnall Sts., Augusta, Ga.

Royal Mfg. Co., Rahway, N. J. "Autopak." (See page 1059.)

Snow Drift—See Sweetland Waste Co.

South Atlantic Waste Co., Charlotte, N. C.

Springfield Waste Co., Mill St., Springfield, Mass.

Standard Waste Co., 3067 E. 61st St., Cleveland, O.

Standard Waste & Rag Co., 234 W. 27th St., New York, N. Y.

Standard Waste Mfg. Co., 2306-10 N. American St., Philadelphia, Pa.

Sweetland Waste Co., 134 Tudor St. (S. Boston), Boston, Mass. "Snow Drift."

Tepee Waste Co., 19 Carteret St., Newark, N. J. "Kanned Kotton."

Travers Twine & Cordage Co., 31 Warren St., New York, N. Y.

Union Wadding Co., Pawtucket, R. I. "Red-Roll." (See page 1057.)

Wisconsin Textile By Products Co., Sibley Ct. & Calumet Ave., Sheboygan, Wis. "Wistex."

Wistex—See Wisconsin Textile By Products Co.

Wood Co., W. A., 373 Atlantic Ave., Boston, Mass.

WATCH HOLDERS—See Holders, Watch

WATCHES, Aviators' Wrist

Depollier & Son, Jacques, 15 Maiden Lane, New York, N. Y.

Ingersoll & Bro., Robt. H., 30 Irving Pl., New York, N. Y.

Thomas Clock Co., Seth, 19 W. 44th St., New York, N. Y.

Waltham Watch Co., Waltham, Mass.

Wittnauer Co., A., 30 W. 36th St., New York, N. Y.

WATCHES, Limousine

(See also Cases, Toilet and Card)

Majestic—See Wittnauer Co.

Waltham Watch Co., Waltham, Mass.

Wittnauer Co., A., 30 W. 36th St., New York, N. Y. "Majestic."

WATCHMAN'S CLOCKS—See Clocks, Time Recording and Watchman's

WATER ALARMS—See Columns, Water

WATER CARRYING BAGS—See Bags, Water Carrying

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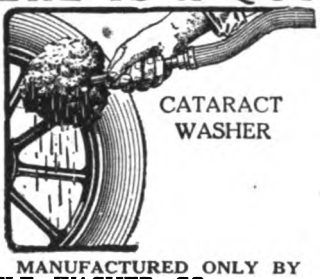
Car owners everywhere are realizing that the CATARACT is just the washer they have been looking for—it is filling a long-felt want. Public garages are buying large numbers of CATARACT Washers. They say that one boy with a CATARACT Washer can clean a car quicker and more thoroughly than two men with the old pail and sponge or brush method.

Why Not Lay In Some Quick Sellers? Our terms to the Trade Are Liberal.

The CATARACT Washer is made entirely of nickeled brass; the nozzle portion wound with a soft mop yarn secured with soft copper wire, making it absolutely non-rustible when coming in contact with water. It will not scratch the finest polished surface. Quickly attaches to ordinary garden hose. Great for cleaning the hard-to-get-at places.

NO. 1 CATARACT STOP COCK HANDLE WITH MOP retails at $4.00 and is ten inches in length without the mop. The water can be turned on or off RIGHT IN THE HANDLE. Our NO. 2 CATARACT PLAIN EIGHT INCH HANDLE WITH MOP retails at $2.75. Extra CATARACT MOPS $1.50 each.



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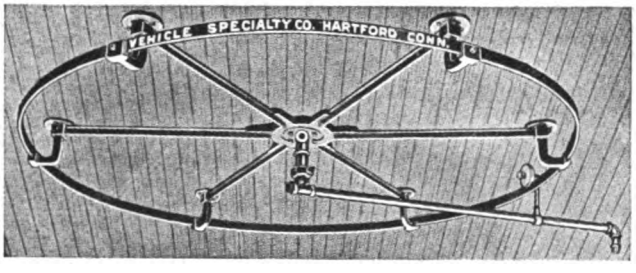

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Designed to meet the requirements where a longer hose arm than 4½ feet is required. The hose arm is supported in any position by a circular steel track which takes all strain from the washer head. This washer is absolutely NON-LEAKABLE and is designed for particularly hard usage and will cover a large amount of floor space. Made in two styles—Plain and Illuminated. Manufacturers of the "Excelsior Plain" and "Superior Lighted" Washers.
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Red-Roll Auto-Waste comes in a convenient and attractive package. Just what every car-owner has been looking for.
By keeping a supply always in stock you will be in a position to sell Auto-Waste instead of giving handfulls away every time a motorist runs in for "just a little waste, please."

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WATER CIRCULATING PUMPS, MOTOR BOAT—See Pumps, Motor Boat Water Circulating

WATER CIRCULATING PUMPS, TRACTOR—See Pumps, Tractor Water Circulating

WATER CIRCULATING REGULATORS—See Regulators, Water Circulating

WATER CIRCULATION GAGES—See Gages, Water Circulation

WATER CIRCULATION REGULATING VALVES—See Valves, Water Circulation Regulating

WATER COLUMN MIRRORS—See Mirrors, Water Gage

WATER COLUMNS—See Columns, Water

WATER CONNECTIONS—See Connections, Brass Water

WATER COOLERS—See Radiators, Water Cooling

WATER, Distilled

(For use in Storage Batteries)

Hygeia Distilled Water Co., New York, N. Y. (See page 1059.)

WATER LEVEL REGULATORS—See Regulators, Water Level

WATER LINE GAGES—See Gages, Boiler Water

WATER PUMPS—See Pumps, Water

WATER REGULATING VALVES — See Valves, Water Circulation Regulating.

WATER STILLS—See Stills, Water

WATERPROOF CEMENT, AIRPLANE—See Cement, Airplane Waterproof

WAYS, Balancing

(For Balancing Machine—See Machine, Balancing)

Defiance Machine Works, 434 Perry St., Defiance, O.

Rockford Tool Co., 2410 Harrison Ave., Rockford, Ill.

WEARING APPAREL—See Clothing; also Gloves; also Leggings; also Mufflers

WEATHER STRIPS—See Strips, Wind Shield Weather

WEB STRAPS—See Straps, Web

WEBBING, COACH—See Lace, Coach

WEBBING COTTON—See Webbing, Jute and Cotton

WEBBING, Jute and Cotton

American Mills Co. of N. Y. 433 Broadway, New York, N. Y.

Buffalo Weaving & Belting Co., Buffalo, N. Y. (See page 1059.)

Goss Co., J. C., 20 E. Woodbridge St., Detroit, Mich.

Hudson Narrow Fabric Co., Cherry St., Hudson, Mass.

Hope Webbing Co., 1005 Main St., Pawtucket, R. I.

Landers Bros. Co., Dept. A 2, Toledo, O. (See page 605.)

Ludlow Mfg. Associates, 111 Devonshire St., Boston, Mass. (See page 1059.)

Modern Belt & Web Co., Emerson Tower Bldg., Baltimore, Md.

Susquehanna Webbing Co., Fifth St., Bloomsburg, Pa.

WEDGE PLATES—See Plates, Demountable Rim Wedge

WELDERS' CLAMPS—See Clamps, Oxy-acetylene Welders

WELDERS' GOGGLES—See Goggles, Mechanics' and Welders'

WELDING, Autogenous

Admiral Welding Machine Co., 1605 Locust St., Kansas City, Mo.

Advance Welding Machine Co., 111 N. Desplaines St., Chicago, Ill.

Ajax Auto & Aero Sheet Metal Co., 419 W. 47th St., New York, N. Y. (See page 803.)

American Welding Co., 2301 Olive St., St Louis, Mo.

American Welding Co., 3011 S. Wabash Ave., Chicago, Ill.

Atlantic Welding Works, 30th & Callowhill Sts., Philadelphia, Pa.

Atlas Welding Works, 249-51 Union St., Elizabeth, N. J.

Atlas Welding & Supply Co., 2930 Penn Ave., Pittsburgh, Pa.

Birmingham Welding Co., 2200 First Ave., S., Birmingham, Ala.

Bisier Welding & Cutting Co., 196 11th Ave., New York, N. Y.

Blanchette Welding Co., 149-51 S. Broadway, Denver, Colo.

Blickman, S., New York, N. Y. (See page 751.)

Bossert Corp., Utica, N. Y. (See page 897.)

Bourponville Welding Co., Eng., 241-45 W 64th St., New York, N. Y.

Brazing & Welding Co., 1615 Wabash Ave., Chicago, Ill.

Brooklyn Welding Co., 184-86 Adams St., Brooklyn, N. Y.

Buckeye Welding & Repair Shop, 133 Water St., Lima, O.

Buffalo Cylinder Grinding Co., 337 Main St., Buffalo, N. Y.

Busch-Hartman Co., 716 Golden Gate Ave., San Francisco, Cal.

Cambridge Welding Works, 51 Ames St., Cambridge, Mass.

Capitol Welding Co., 45-47 Sabin St., Providence, R. I.

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Buffalo Weaving and Belting Co.

Buffalo, N. Y.

Spinners and Weavers

All Qualities Stay and Strainer Webs, Tire and Rebound Straps

Anti-Squeak Web

Ford Brake Lining

Floor Space:
250,000 Square Feet

12,000 Spindles **300 Looms**

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Standard for Quality in the Handy 1-lb. Bale for Automotive Use

Materials selected, refined and mixed for greatest cleanness, absorbency and economy. Packed in the neatest 1-Lb. Bale for portability and convenience.

Dealers: Draw dividends on the most extensive advertising campaign in the history of the Cotton Waste industry.

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All Widths and Weights

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U. S. PHARMACOPOEIA STANDARD

Distilled Exclusively for Electric Storage Batteries

32 oz.

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Willard Storage Battery Co.
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Cave Welding & Mfg. Co., 32 Liberty St., Springfield, Mass. "Rego."

Central Ohio Welding Co., 200 E. Lynn St., Columbus, O.

Columbus Welding Shop, 783 N. Fourth St., Columbus, O.

Crosby Co., Buffalo, N. Y. (See page 899.)

Davis & Schegg Co., 302 Amsterdam Ave., New York, N. Y.

Day Welding Co., 43 Summer Ct., N. W., Washington, D. C.

Dayton Welding Co., 13 S. St. Clair St., Dayton, O.

Delcampe Welding Co., 1517 Wood Ave., Bridgeport, Conn.

Des Moines Welding Co., 117-19 Grand Ave., Des Moines, Ia.

Detroit Welding Specialty Co., 620 Beaubien St., Detroit, Mich.

Dyer Co., G. H., 155 Brookline St., Cambridge, Mass.

General Welding Co., 855-57 14th St., Hoboken, N. J.

Gibbs Welding Co., 13th & Locust Sts., Des Moines, Ia.

Globe Machine & Stamping Co., 1200-50 W. 76th St., Cleveland, O. (See page 1049.)

Great Lakes Welding Co., 937-45 West St., Cleveland, O.

Harlem Machine Co., 542 W. 127th St., New York, N. Y.

Hauck Mfg. Co., 126-34 Tenth St., Brooklyn, N. Y.

Havens Bros. Mfg. & Supply Co., 1622 Wazee St., Denver, Colo.

Heine Machine Works, 4160 Minnehaha Ave., Minneapolis, Minn.

Hercules Welding & Machine Co., 223-25 N. 16th St., Philadelphia, Pa.

Hoag Welding Co., 31 E. Court St., Springfield, Mass.

Hobbie Welding Plant, Maple and Fourth Sts., Hampton, Ia.

Horgan Co., Paul, 1055-57 Atlantic Ave., Brooklyn, N. Y.

Hub Machine, Welding & Contracting Co., 22d & Race Sts., Philadelphia, Pa.

Imperial Welding Co., 2704 W. Jefferson Ave., Detroit, Mich.

Ireland & Matthews Mfg. Co., Beard & Chatfield St., Detroit, Mich.

K. G. Welding & Cutting Co., 556 W. 34th St., New York, N. Y.

Kelso Welding Co., E. H., 1030 Francis St., St. Joseph, Mo.

Keuka Industries, Inc., Hammondsport, N. Y.

Kimballs, Inc., 137 Ashmun St., New Haven, Conn.

Laclede Iron Works, 1315 Chestnut St., St. Louis, Mo.

Lawrence & Co., L., 292 Halsey St., Newark, N. J.

Lionel Corp., 605-21 S. 21st St., Irvington, N. J.

McCrea & Jones, 30 Catherine St., Utica, N. Y.

Manufacturers Welding Co., 154 Berriman St., Brooklyn, N. Y.

Master Welding & Cutting Corp., 1249 Holden Ave., Detroit, Mich.

Messer Welding Supply Corp., 111 11th St., Brooklyn, N. Y.

Metal Parts Mfg. Co., 1084 E. 152nd St., Cleveland, O.

Metal Welding & Supply Co., 1440 Blake St., Denver, Colo.

Metals Welding Co., 4400 Perkins Ave., Cleveland, O.

Michaels & Mourre, 344 Amsterdam Ave., New York, N. Y.

Milwaukee Cylinder Grinding Co., Humboldt & Concordia Aves., Milwaukee, Wis.

National Rubber & Specialties Co., 4423-39 Chickering Ave., Cincinnati, O.

National Welding Co., 326-28 Dixwell Ave., New Haven, Conn.

National Welding Co., 30 Dickerson St., Newark, N. J.

National Welding & Mfg. Co., 1413-30 Niagara St., Buffalo, N. Y.

Oregon Welding Machine Co., 305 Glisan St., Portland, Ore.

Oxy-Acetylene Welding Co., 1921 Grand Ave., Kansas City, Mo.

Oxy-Carbi Co., New Haven, Conn.

Pacific Coast Welding Co., 610 E. Pike St., Seattle, Wash.

Peerless Welding Co., 25 Stanhope St., Boston, Mass.

Peerless Welding Co., 505 W. 45th St., New York, N. Y.

Pioneer Welding Co., 610 E. Main St., Kalamazoo, Mich.

Pittsburgh Reinforced Brazing & Machine Co., 2525 Liberty Ave., Pittsburgh, Pa.

Pondelick Bros., 215 S. Leavitt St., Chicago, Ill.

Portland Brazing & Machine Works, 306 Glisan St., Portland, Ore.

Powell Welding Co., 143 Rogers Ave., Brooklyn, N. Y.

Rego—See Cave Welding & Mfg. Co.

S. & M. Welding Co., 1331-33 E. 55th St., Cleveland, O.

Schaap Automobile Co., 344 Cumberland St., Brooklyn, N. Y. (See page 833.)

Schemmel Welding Machine Works, Wapakoneta, O.

Scored Cylinder Works, 433 Golden Gate Ave., San Francisco, Cal.

Smith & Co., W. R., 304-06 W. 53d St., New York, N. Y.

Sorenson, C., 18 E. 16th St., Chicago, Ill.

Standard Gas Products Co., 216 Ivy St., Atlanta, Ga.

Standard Welding & Machine Co., 416 E. Second St., Des Moines, Ia.

Sterling Engine Co., 333 S. Clinton St., Chicago, Ill.

Superior Welding Co., 331 Knoxville Ave., Peoria, Ill.

Superior Welding & Machine Co., 53 Canal St., Stamford, Conn.

Tragesser Steam Copper Works, John, 447-57 W. 26th St., New York, N. Y. (See page 955.)

Trindl Co., Wabash Ave. & 20th St., Chicago, Ill. (See page 341.)

Twin City Welding Co., 318 Seventh Ave., S., Minneapolis, Minn.

Vilter Mfg. Co., 379 Clinton St., Milwaukee, Wis.

Vulcan Brazing & Machine Co., 1630-32 Vine St., Philadelphia, Pa.

Waterbury Welding Co., 1147 South Main St., Waterbury, Conn. (See page 613.)

Waterhouse Welding Co., 2 Pelham St., Boston, Mass.

Weldrite Co., Queensboro Bridge Plaza, Long Island City, N. Y.

Western Drop Forge Co., Marion, Ind. (See page 727.)

Wilkes-Barre Welding Co., 6 W. Ross St., Wilkes-Barre, Pa.

Worcester Pressed Steel Co., Worcester, Mass. (See page 919.)

WELDING COMPOUNDS—See Compounds, Welding

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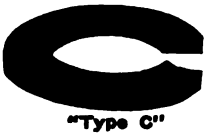

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3-16"	1-16	x	1-16"	3-16"	1-16	x	3-64"
1-4 "	5-64	x	3-64"	1-4 "	5-64	x	1-16"
5-16"	1-8	x	1-8 "	5-16"	1-8	x	3-32"
3-8 "	1-8	x	1-8 "	3-8 "	1-8	x	3-32"
7-16"	11-64	x	11-64"	7-16"	11-64	x	1-8 "
1-2 "	11-64	x	11-64"	1-2 "	11-64	x	1-8 "
9-16"	13-64	x	13-64"	9-16"	13-64	x	5-32"
5-8 "	13-64	x	13-64"	5-8 "	13-64	x	5-32"
11-16"	1-4	x	1-4 "	11-16"	1-4	x	3-16"
3-4 "	1-4	x	1-4 "	3-4 "	1-4	x	3-16"
7-8 "	17-64	x	17-64"	7-8 "	17-64	x	3-16"
1"	5-16	x	5-16"	1"	5-16	x	1-4 "

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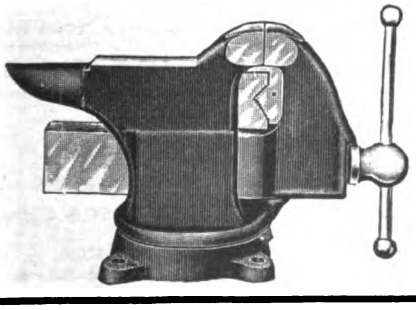

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WELDING, Electric

Beckley Perforating Co., North Ave., Garwood, N. J.

Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn.

Buckeye Welding & Repair Shop, 138 Water St., Lima, O.

Central Ohio Welding Co., 200 E. Lynn St., Columbus, O.

Cincinnati Ball Crank Co., 90 North St., Cincinnati, O. (See page 333.)

Gem Stamped Steel Co., 16 Beach St., Everett, Mass.

Globe Machine & Stamping Co., 1200-50 W. 76th St., Cleveland, O. (See page 1049.)

McDowell Mfg. Co., Millvale Sta., Pittsburgh, Pa.

Metal Parts Mfg. Co., 1084 E. 152nd St., Cleveland, O.

Metal Welding & Supply Co., 1440 Blake St., Denver, Colo.

Metzger Welding Co., 1625 Blue Rock St., Cincinnati, O. (See page 1151.)

Mirrorscope Co., E. 168th St. & Waterloo Rd., Cleveland, O.

Pioneer—See Thomson Electric Welding Co.

Standard Parts Co., Cleveland, O. (See page 1149.)

Steel Products Co. (Michigan Plant), 7731 Conant Ave., Detroit, Mich.

Thomson Electric Welding Co., 166 Pleasant St., Lynn, Mass. "Pioneer."

Turner Novelty Co., John C., Dayton, O.

Williams & Co., J. H., 88 Richards St., Brooklyn, N. Y. (See page 1081.)

Worcester Pressed Steel Co. (Barbers Crossing), Worcester, Mass.

WELDING FLUX—See Compounds, Welding

WELDING MACHINES — See Machines, Electric Welding; also Machines, Autogenous Welding

WELDING RODS—See Rods, Welding

WELDING TORCHES — See Torches, Acetylene Brazing and Welding; also Machines, Autogenous Welding

WELTS, UPHOLSTERY—See Bindings, Upholstery

WET TOOL GRINDERS—See Grinders, Wet Tool

WHEEL ALIGNING GAGES—See Gages, Wheel Aligning

WHEEL ATTACHMENTS for FORDS—See Attachments, Tilting Wheel

WHEEL BEARINGS FOR FORDS—See Bearings, Front Wheel

WHEEL BRUSHES—See Washers, Vehicle

WHEEL CARRIERS FOR FORDS—See Holders or Carriers, Spare Wheel

WHEEL CLOCKS FOR FORDS — See Clocks, Steering Wheel

WHEEL DISCS for FORDS—See Discs, Wheel

WHEEL DRESSERS—See Dressers, Emery Wheel

WHEEL GAGES—See Gages, Wheel Aligning

WHEEL GRIPS—See Grips, Tractor Wheels

WHEEL HOLDERS—See Holders or Carriers, Spare Wheel

WHEEL HUBS—See Hubs, Wheel

WHEEL PULLERS—See Pullers

WHEEL REMOVING CRANES — See Cranes; Drags and Jacks, Truck Wheel Removing

WHEEL REMOVING DRAGS—See Cranes, Drags and Jacks, Truck Wheel Removing

WHEEL RIMS—See Rims, Wheel

WHEEL TIGHTENING COMPOUNDS—See Compounds—Wood Wheel Tightening

WHEEL TRUCKS—See Castors and Wheel Trucks

WHEEL TRUEING TOOLS—See Dressers, Emery Wheel

WHEELS, Airplane Pressed Steel

Detroit Pressed Steel Co., Detroit, Mich. "Disteel." (See page 1203.)

Disteel—See Detroit Pressed Steel Co.

Reliance Wheel Co., Federal Bldg., Youngstown, O.

WHEELS, Airplane Spring

Atlas Wheel Co., Rockefeller Bldg., Cleveland, O.

WHEELS, Airplane Wire

Booth—See Detroit Wire Wheel Corp.

Detroit Wire Wheel Corp., 7175 Clayton Ave., Detroit, Mich. "Booth."

Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for "Palmer" and "J. N." Wheels.) (See page 125.)

J. N.—See Wire Wheel Corp. of America.

Maryland Metal Products, Hagerstown, Md. "Pasco."

Palmer—See Wire Wheel Corp. of America.

Pasco—See Maryland Pressed Steel Co.

Wire Wheel Corp. of America, 1700 Elmwood Ave., Buffalo, N. Y. "Palmer," "J. N." (See page 772.)

WHEELS, CARBORUNDUM—See Wheels, Grinding

WHEELS, Cast Steel

American Cushion Wheel Co., 7956 S. Chicago Ave., Chicago, Ill.

Clark Equipment Co., Buchanan, Mich.

Dayton Steel Foundry Co., Chapel Rd. & C., H. & D. R. R., Dayton, O.

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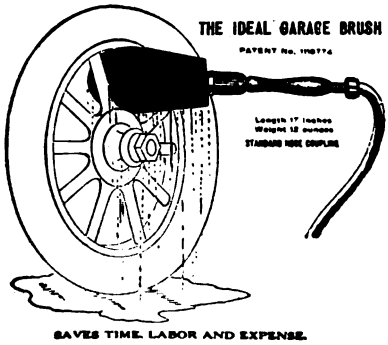

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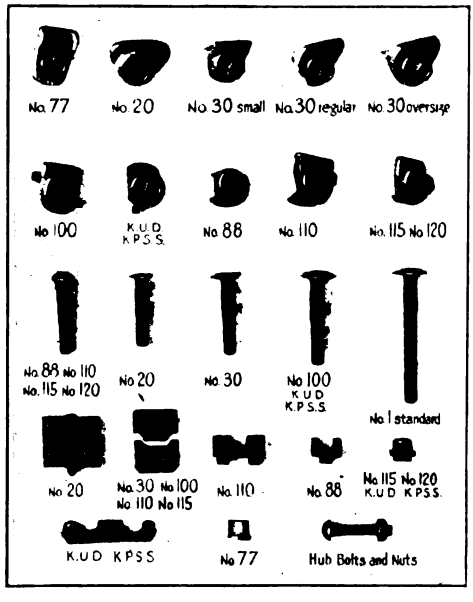

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Jacob Mattern & Sons, Inc.,
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Motor Rim Mfg. Company,
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Cleveland, Ohio

Chicago Wheel & Rim Co.,
2010 Wabash Avenue,
Chicago, Ill.

Kansas City Wheel & Rim Co.,
1522 Grand Ave.,
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WHEELS, Cast Steel (Continued)

Mead—See National Gear & Truck Wheel Corp.

Michigan Steel Casting Co., 1986 Guoin St., Detroit, Mich.

National Gear & Truck Wheel Corp., 405 Fulton Bldg., Pittsburgh, Pa. "Mead." (See page 1109.)

Smith Wheel, Inc., Syracuse, N. Y. (See page 1071.)

Standard Steel Castings Co., Hickox Bldg., Cleveland, O.

West Steel Casting Co., 805-41 E. 70th St., Cleveland, O.

WHEELS, DEMOUNTABLE—See Wheels, Wire; also Wheels, Pressed and Wrought

WHEELS, Demountable, for Fords

(See also Wheels, Wire; for Demountable Hubs—See Hubs, Demountable)

Budd Wheel Corp., 22nd St. & Lehigh Ave., Philadelphia, Pa.

De Luxe—See Simplex Wire Wheel Co.

Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for "House" Wheels.) (See page 125.)

Globe Machine & Stamping Co., 1200-50 W. 76th St., Cleveland, O. (See page 1049.)

House—See Wire Wheel Corp. of America.

Pittsburgh Truck Wheel Corp., Bessemer Bldg., Pittsburgh, Pa.

Simplex Wire Wheel Co., Cadillac, Mich. "De Luxe." (See page 1065.)

Stewart Wire Wheel Co., 601-37 W. Barnes St., Frankfort, Ind.

Wire Wheel Corp. of America, 1700 Elmwood Ave., Buffalo, N. Y. "House." (See page 772.)

WHEELS, Demountable Disc, for Fords

Globe Machine & Stamping Co., 1200-50 W. 76th St., Cleveland, O. (See page 1049.)

WHEELS, DISC—See Wheels, Pressed and Wrought Steel

WHEELS, DISC for FORDS—See Wheels, Demountable Disc

WHEELS, EMERGENCY—See Wheels, Special

WHEELS, EMERY—See Wheels, Grinding

WHEELS, Fifth

(For applying to the rear deck of the car so that trailer can be mounted)

Borst Coupler Control Mfg. Co., Buffalo, N. Y.

Martin Rocking Fifth Wheel Co., P. O. Box 1244P., Springfield, Mass. (See page 1065.)

Mead—See National Gear & Truck Wheel Corp.

National Gear & Truck Wheel Corp., 405 Fulton Bldg., Pittsburgh, Pa. "Mead." (See page 1109.)

Shadbolt Mfg. Co., 68 Flushing Ave., Brooklyn, N. Y.

Wolverine Truck-Trailer Co., 8931 Greeley St., Detroit, Mich.

WHEELS, Grinding

Abrasive Co. (Bridesburg), Philadelphia, Pa.

Alundum—See Norton Co.

American Emery Wheel Works, Waterman, East River & Pitman Sts., Providence, R. I.

Bay State Emery Wheel Co., Worcester, Mass.

Bridgeport Safety Emery Wheel Co., 82 Knowlton St., Bridgeport, Conn.

Buffalo Emery Wheel Co., 127 Ash St., Buffalo, N. Y.

Carborundum Co., Buffalo & 18th Sts., Niagara Falls, N. Y.

Chicago Wheel & Mfg. Co., 1101-03 W. Monroe St., Chicago, Ill.

Cortland Grinding Wheel Co., Cortland, N. Y.

Crystolon—See Norton Co.

Detroit Grinding Wheel Co., Field & Jefferson Sts., Detroit, Mich. "Hart."

Electric Emery Wheel Co., 837 Broad St., Newark, N. J.

Hart—See Detroit Grinding Wheel Co.

National Grinding Wheel Co., 2884 Main St., Buffalo, N. Y.

Norton Co., 1 New Bond St., Worcester, Mass. "Crystolon," "Alundum."

Pennsylvania Grinding Wheel Co., Wayne Junction, Philadelphia, Pa.

Pike Mfg. Co., Pike, N. H.

Pittsburgh Grinding Wheel Co., Rochester, Pa.

Safety Emery Wheel Co., Springfield, O.

Springfield Mfg. Co., 317 Mt. Grove St., Bridgeport, Conn.

Star Corundum Wheel Co., 241-51 Cavalry Ave., Detroit, Mich.

Sterling Grinding Wheel Co., Tiffin, O. (See page 481.)

Superior Corundum Wheel Co., 102 Felton St., Waltham, Mass.

Vitrified Wheel Co., Westfield, Mass.

Waltham Emery Wheel Co., 115 Bacon St., Waltham, Mass.

Waltham Grinding Wheel Co., Waltham, Mass.

WHEELS, HEATED STEERING — See Warmers, Hand

WHEELS, Motor

(For converting ordinary bicycles into motor driven bicycles)

Briggs & Stratton Co., 1047 Louis Ave., Milwaukee, Wis.

Johnson Motor Wheel Co., 916 E. Sample St., South Bend, Ind.

Rollaway Co., 517-19 Shepard St., Toledo, O.

WHEELS, LOCKING—See Locks, Automobile

WHEELS, LOCKING for FORDS — See Locks, Steering Gear

WHEELS, Motor Boat Propeller

American Manganese Bronze Co. (Holmesburg), Philadelphia, Pa.

B & B—See Bryant & Berry Propeller Co.

Bryant & Berry Propeller Co., 3 W. Larned St., Detroit, Mich. "B. & B."

Carpenter & Co., Geo. B., 440 N. Wells St., Chicago, Ill.

Columbian Bronze Corp., 522 Fifth Ave., New York, N. Y.

Halvorsen—See U. S. Products Corp.

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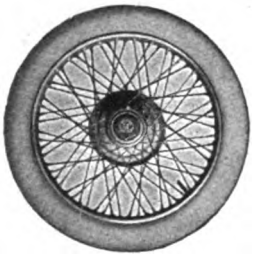

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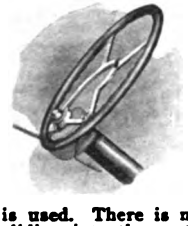

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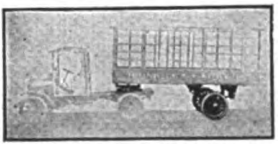

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Harthan—See McFarland Foundry & Machine Co.

Hyde Windlass Co., 2 Federal St., Bath, Me.

King Bros., 439 E. Water St., Syracuse, N. Y.

McFarland Foundry & Machine Co., Trenton, N. J. "Harthan."

Michigan Wheel Co., 1140-48 Monroe Ave., N. W., Grand Rapids, Mich.

Stickler Weedless Wheel Co., Cook St., Portage, Wis.

U. S. Products Corp., 220 S. Michigan Ave., Chicago, Ill. "Halvorsen."

WHEELS, Motor Boat Reversing Propeller

Halvorsen—See U. S. Products Corp.

Gordon Propeller & Mfg. Co., 9001 Desmond Ave., Cleveland, O.

Michigan Wheel Co., 1140-48 Monroe Ave., N. W., Grand Rapids, Mich.

U. S. Products Corp., 220 S. Michigan Ave., Chicago, Ill. "Halvorsen."

WHEELS, Motor Boat Steering

Edson Mfg. Co., 257 Atlantic Ave., Boston, Mass.

Sea Bright Dory Works, 491 Atlantic Ave., Long Branch, N. J.

WHEELS, PNEUMATIC—See Wheels, Special

WHEELS, Pressed and Wrought

All-Steel Wheel Co., Widener Bldg., Philadelphia, Pa.

Budd Wheel Corp., Philadelphia, Pa. "Michelin."

Chicago Steel Wheel Co., 2118 S. Michigan Ave., Chicago, Ill.

Custer Pressed Steel Wheel Co., 112 Holley Ave., Bradford, Pa.

Detroit Pressed Steel Co., Detroit, Mich. "Disteel." (See page 1203.)

Disteel—See Detroit Pressed Steel Co.

Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for Hayes Wheels.) (See page 125.)

Forsyth Bros. Co., Harvey, Ill. (See page 1067.)

French & Hecht, Third & Farnam Sts., Davenport, Ia.

Hart-Parr Co., Lawler St., Charles City, Ia.

Harvey Rim & Wheel Co., 25 Jewett Ave., Buffalo, N. Y.

Hayes Wheel Co., Horton St., Jackson, Mich.

Indestructible Wheel Co., Lebanon, Ind.

Lack Mfg. Co., 1200 S. Third St., Paducah, Ky.

Made-O-Metal—See Pandolfo Mfg. Co.

Michelin—See Budd Wheel Corp.

Pandolfo Mfg. Co., St. Cloud, Minn. "Simmons," "Made-O-Metal." (See page 157.)

Parker Wheel Co., 3778 E. 78th St., Cleveland, O.

Pennsylvania Hardware & Paint Co., Woolworth Bldg., New York, N. Y.

Pneumatic Disc Wheel Co., 102 N. Eighth St., Richmond, Va.

Reliance Wheel Co., Federal Bldg., Youngstown, O.

Simmons—See Pandolfo Mfg. Co.

Sivyer Steel Casting Co., 37th Ave. & Mitchell St., Milwaukee, Wis.

WHEELS, PROPELLER—See Wheels, Motor Boat Propeller

WHEELS, Repairing of

Chicago Wheel & Rim Co., 2010 S. Wabash Ave., Chicago, Ill. (See pages 808 and 809.)

WHEELS, REVERSING—See Wheels, Motor Boat Reversing

WHEELS, Special Pneumatic, Spring and Emergency

American Cushion Wheel Co., 7956 S. Chicago Ave., Chicago, Ill.

Atlas Wheel Co., Rockefeller Bldg., Cleveland, O.

Autocraft Corp., 126 State St., Boston, Mass. "Monarch."

Cameron Spring Wheel Co., 622 Brainerd St., Detroit, Mich.

Constant Auto Wheel Co., 619 Vermont St., Lawrence, Kans. "Modlin."

Cornfield Wheel Co., 1540 Ann Pl., Detroit, Mich.

Erickson Tire Corp., 159-61 25th St., Brooklyn, N. Y.

Gray Bros., 231 S. La Salle St., Chicago, Ill.

Halsey & Lothrop, 126 State St., Boston, Mass.

Houston Pneumatic Puncture-Proof Wheel Co., 2761 E. 37th St., Cleveland, O.

Jaxon Steel Products Co., Jackson, Mich.

Kuns Wheel Co., 2601 Vliet St., Milwaukee, Wis.

Mead—See National Gear & Truck Wheel Corp.

Martin Cushion Wheel Co., 311-13 N. Sangamon St., Chicago, Ill.

Midwest Engine Co., 19th St. & Martindale Ave., Indianapolis, Ind. "Stopshok."

Miramon, Barrows & Co., 141 Broadway, New York, N. Y.

Modlin—See Constant Auto Wheel Co.

Monarch—See Autocraft Corp.

Morand Cushion Wheel Co., 800-02 S. May St., Chicago, Ill.

National Gear & Truck Wheel Corp., 405 Fulton Bldg., Pittsburgh, Pa. "Mead." (See page 1109.)

National Wheel Co., Wausau, Wis. (See page 1067.)

Peck Wheel Co., 2121 Michigan Ave., Chicago, Ill.

Prather Wheel Mfg. Co., 427 Temple Ave., Detroit, Mich.

Pressed Steel Pneumatic Wheel Co., 2661 E. 37th St., Cleveland, O.

Pronovost Wheel Co., 38 E. Elizabeth St., Detroit, Mich.

Rech-Marbaker Co., Eighth St. & Girard Ave., Philadelphia, Pa. "Sendelbach."

Schick Wheel & Tire Co., 89 Indiana Ave., Wheeling, W. Va.

Sendelbach—See Rech-Marbaker Co.

Sewell Cushion Wheel Co., 6468 Gratiot Ave., Detroit, Mich.

Sipe—See Automobile Spring Wheel Co.

Stopshok—See Midwest Engine Co.

Tourtier Wheel Co., 1416 Broadway, New York, N. Y.

Watson Wheel & Rim Corp., Hippodrome Bldg., Cleveland, O.

Wendland Pneumatic Wheel Co., Colonial Arcade, Cleveland, O.

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NATIONAL Truck Wheel CUSHIONS

National Cushions protect your truck

When you equip your truck-wheels with cushions, then you make your best investments for truck maintenance.

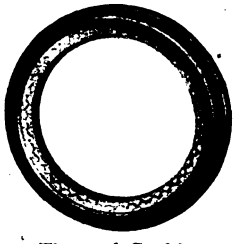
By the National method any wheel may be converted into a cushion-wheel at a small cost.

"National Cushions" provide torque resilience for every engine impulse, lessen transmission strains, and by resilient means separate the truck from the road.

National Wheel Company

Wausau, Wisconsin, U. S. A.

Write for Booklet on Cushion Wheels.
Some Territory Still Open to Live Agents.

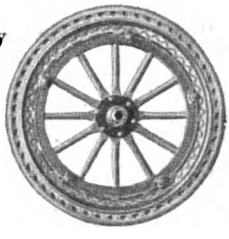


Tire and Cushions for truck wheels

Solid Tire with Cushion and adopter for pneumatic demountable wheels

Our Guaranty

We guarantee for five years every Cushion sold



30x3½ Front Wheel for Ford truck

Our Motto

A satisfied truck owner for every set of Cushions sold

Specify National Cushions for your new truck

Exceptional Proposition for Ford Truck Owners

"The Wheel That Stands the Shock"

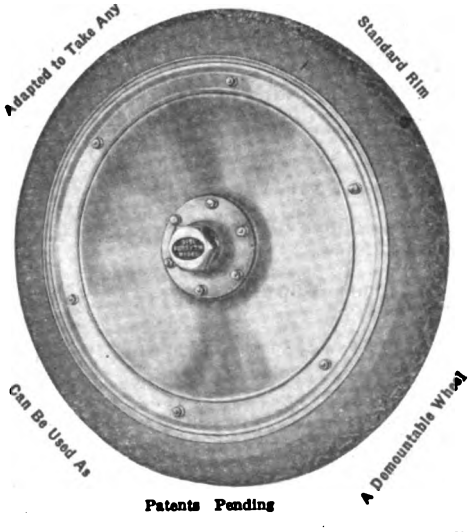
Forsyth Demountable Rim, Single Disc Wheel

Light Weight

The *Forsyth* Wheel is made to take any standard demountable rim which can be quickly applied or removed from the disc of the wheel.

Mass Construction

After years of careful study and development, we discovered several principles in metal wheel construction. Our aim was to avoid using simply a mass of "dead" metal and unnecessary weight.



Patents Pending

Increased Strength

Therefore, only *four* wheels are required, thus saving *weight* and *expense*.

Shock Absorption

We were after a "live" wheel, which would immediately respond to and absorb shocks throughout the structure as a whole, instead of locally at any point. We obtained this result with a low peripheral weight.

Forsyth Brothers Company, Harvey, Ill.

We also make Frames, Brake Drums, and other pressings

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WHEELS, SPRING AIRPLANE — See Wheels, Airplane Spring

WHEELS, SPRING—See Wheels, Special Pneumatic, Spring and Emergency

WHEELS, STEEL AIRPLANE—See Wheels, Airplane Pressed Steel

WHEELS, STEEL—See Wheels, Pressed & Wrought; also Wheels, Cast Steel

WHEELS, Steering

(Including Tilting Steering Wheels; for Rims only—See Rims, Rubber; also Rims, Wood Steering Wheel; For Heated Wheels—See Wheels, Heated Steering)

Allerding Products Co., 209 N. Main St., Mansfield, O.

American Metal Products Co., 6431-61 Epworth Blvd., Detroit, Mich. (See page 625.)

American Wood Rim Co., Onaway, Mich.

Detroit Steering Wheel Corp., 4857 Woodward Ave., Detroit, Mich. **"Tiltlox."**

E-Z—See Gemco Mfg. Co.

F. M. F.—See Sav-a-Life Fender Co.

Fold-O-Lock Steering Wheel Co., 114-16 S. Lawrence Ave., Wichita, Kans.

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. "E-Z." (See pages 174 and 175.)

Hartzell Steering Wheel Co., Piqua, O.

More-Room—See Neville Steering Wheel & Mfg. Co.

Neville Steering Wheel & Mfg. Co., 602 Norris St., Wayne, Mich. "More-Room." (See page 1135.)

Pouvailsmith Corp., Smith St., Poughkeepsie, N. Y. "Povasco."

Povasco—See Pouvailsmith Corp.

Rastetter & Sons, Louis, Nelson & Wall Sts., Fort Wayne, Ind.

Reese Machine & Tool Works, 224-30 W. Main St., Plymouth, Pa.

Sav-a-Life Fender Co., Guardian Bldg., Cleveland, O. "F. M. F."

Tiltlox—See Detroit Steering Wheel Corp.

WHEELS, Steering, for Fords

(Including large and tilting wheels; for Heated Wheels—See Wheels, Heated.)

American Metal Parts Mfg. Co.—See Fulton Co.

Au-To Compressor Co., Wilmington, O. "Ore."

Badger Mfg. Corp., Milwaukee, Wis. (See page 173.)

Becco—See Michigan Motor Specialties Co.

Comfy-Drives—See Main Electric Co.

De Luxe—See Decker Co.

Decker Co., Richard M., 2909 Indiana Ave., Chicago, Ill. "De Luxe." (See page 587.)

Detroit Steering Wheel Corp., 4857 Woodward Ave., Detroit, Mich. **"Tiltlok."**

E-Z—See Gemco Mfg. Co.

Fulton Co., 75th & National Aves., Milwaukee, Wis. (Sole Distributors for American Metal Parts Mfg. Co., Milwaukee, Wis. (See page 1034.)

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. "E-Z." (See pages 174 and 175.)

Halladay Co., L. P., 501 N. Monroe St., Streator, Ill.

Hasco—See Howard Auto Specialties Co.

Howard Auto Specialties Co., Swampscott, Mass. "Hasco."

Michigan Motor Specialties Co., 120 Mt. Elliott Ave., Detroit, Mich. "Becco."

More-Room—See Neville Steering Wheel & Mfg. Co.

Neville Steering Wheel & Mfg. Co., 602 Norris St., Wayne, Mich. "More-Room." (See page 1135.)

Ore—See Au-To Compressor Co.

Osmun Co., Ford Bldg., Detroit, Mich.

Rastetter & Sons, Louis, Nelson & Wall Sts., Fort Wayne, Ind.

Stout's Mfg. Co., Lockport, N. Y. (See page 1065.)

Tiltlok—See Detroit Steering Wheel Corp.

W-A—See Whetstone & Co.

Warner Gear Co., Muncie, Ind. (See page 457.)

Whetstone & Co., John H., Court St., Lapeer, Mich. "W-A."

WHEELS, HEATED STEERING — See Warmers, Hand

WHEELS, TILTING—See Wheels, Steering

WHEELS, Tractor Steel

Electric Wheel Co., 28th & Cedar Sts., Quincy, Ill.

Empire Mfg. Co., 615½ Hampshire St., Quincy, Ill.

Evans-Lawrie Co., 708 Beacon St., Boston, Mass. Eastern Distributors for Hayes Wheels.) (See page 125.)

Flour City Ornamental Iron Co., Minneapolis, Minn.

French & Hecht, Third & Farnum Sts., Davenport, Ia.

Geneva Metal Wheel Co., Geneva, O.

Hayes Wheel Co., Horton St., Jackson, Mich

Hoosier Wheel Co., Shelby Rd. & Big Four R. R., Franklin, Ind.

Mansfield Steel Corp., 288 E. Milwaukee Ave., Detroit, Mich.

Mastodon—See Standard Steel Castings Co.

P. T.—See Wharton, Jr., & Co.

Peru Plow & Wheel Co., Peru, Ill.

Reliance Wheel Co., Federal Bldg., Youngstown, O

Standard Parts Co., Cleveland, O. (See page 1149.)

Standard Steel Castings Co., Hickox Bldg., Cleveland, O. "Mastodon."

W & K—See Whitehead & Kales Co.

Wharton, Jr., & Co., Wm., Easton, Pa. "P T."

Whitehead & Kales Co., S. Dearborn Rd., River Rouge, Mich. **"W. & K."**

WHEELS, WIRE AIRPLANE—See Wheels, Airplane Wire

WHEELS, Wire

(Including both Standard and Demountable Wheels)

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern and Southern Distributors for Mott Wheels.) (See page 275.)

Booth—See Detroit Wire Wheel Corp.

Budd Wheel Corp., 22nd & Lehigh Ave., Philadelphia, Pa.

Dayton Wire Wheel Co., 325 Miami Chapel Rd., Dayton, O.

Detroit Wire Wheel Corp., 7175 Clayton Ave., Detroit, Mich. **"Booth."**

Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for "Houk," "House" and Hayes Wheels.) (See page 125.)

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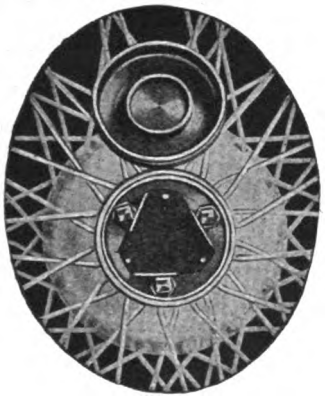

Safety and Beauty Combined

Not only are Phelps Wheels distinctively individual in appearance, but they are SAFE at all times from the common danger of losing the hub cap and from coming loose. Note the illustration above, which shows the hub-locking mechanism at the end of all

Phelps DEMOUNTABLE

PHELPS DEMOUNTABLE WIRE WHEELS

The three cap screws, as shown, fasten directly to the inner hub and the spring tongues rest against the hex of the cap screw, preventing it from turning. When you sell Phelps Wheels, therefore, you sell not alone added beauty and refinement to any car but the complete assurance of safety as well.

Our output is at the service of high-grade motor car builders who desire to enhance their cars' appearance with superior wheels. We have a real business proposition for jobber. Write us for details.

Phelps Manufacturing Company
Columbus, Ohio

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WHEELS, Wire (Continued)

Grant Wire Wheel Mfg. Co., 865 W. North Ave., Chicago, Ill.
Hayes Wheel Co., Horton St., Jackson, Mich.
Houk—See Wire Wheel Corp. of America.
House—See Wire Wheel Corp. of America.
Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y. "Rudge-Whitworth."
Maryland Metal Products Co., Hagerstown, Md. "Pasco."
Mott Wheel Works, Jackson, Mich.
Pasco—See Maryland Metal Products Co.
Phelps Mfg. Co., Columbus, O. (See page 1069.)
Rudge-Whitworth—See Marlin-Rockwell Corp.
Simplex Wire Wheel Co., Cadillac, Mich. (See page 1065.)
Standard Parts Co., Cleveland, O. "Stanweld." (See page 1149.)
Stanweld—See Standard Parts Co.
Stewart Wire Wheel Co., 601-37 W. Barner St., Frankfort, Ind.
Wire Wheel Corp. of America, 1700 Elmwood Ave., Buffalo, N. Y. "Houk," "House." (See page 772.)

WHEELS, Wire, for Fords

(For Demountable Wheels—See Wheels, Demountable)

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern and Southern Distributors for Mott Wheels.) (See page 275.)
Detroit Wire Wheel Corp., 7175 Clayton Ave., Detroit, Mich.
Grant Wire Wheel Mfg. Co., 865 W. North Ave., Chicago, Ill.
Great Western Mfg. Co., Laporte, Ind. "Lindsay."
Lindsay—See Great Western Mfg. Co.
Maryland Metal Products Co., Hagerstown, Md. "Pasco."
Mott Wheel Works, Jackson, Mich.
Pasco—See Maryland Metal Products Co.
Phelps Mfg. Co., Columbus, O. (See page 1069.)
Standard Parts Co., Cleveland, O. (See page 1149.)

WHEELS, Wood

Acorn—See Crane & MacMahon.
Archibald Wheel Co., 148 West St., Lawrence, Mass.
Baltimore Hub Wheel & Mfg. Co., 221 Gay St., Baltimore, Md.
Bilt Wood—See Hoopes, Bro. & Darlington.
Bimel Spoke & Auto Wheel Co., Portland, Ind. (See page 1065.)
Central City Wheel Works, 108 Wilkinson St., Syracuse, N. Y.
Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis Ind. (Sales Representatives.) (See page 345.)
Chicago Wheel & Rim Co., 2010 S. Wabash Ave., Chicago, Ill. (See pages 808 and 809.)
Crane & MacMahon, St. Marys, O. "Acorn." "Hickory Nut."
Dayton Automotive Wheel Co., Dayton, O.
Eames & Co., A. M., Framingham, Mass.
Eberly & Orris Mfg. Co., Mechanicsburg, Pa.
Empire Wheel Works, 610 South St., Utica, N. Y.
Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for Hayes Wheels.) (See page 125.)
Harris Co., 7 Northampton St., Easthampton, Mass.
Hayes Motor Truck Wheel Co., St. Johns, Mich.
Hayes Wheel Co., Horton St., Jackson, Mich.
Hickory Nut—See Crane & MacMahon.
Hoopes, Bro. & Darlington, West Chester, Pa. "Bilt Wood."
Imperial Wheel Co., Richfield Rd., Flint, Mich.
Jones & Co., Phineas, 305 Market St., Newark, N. J.
Kelsey Wheel Co., Detroit, Mich. (See page 1063.)
Meeker Mfg. Co., Linden & Huffman Aves., Dayton, O.
Merrill, F. S., 3 Oakland St., Amesbury, Mass.
Motor Wheel Corp., Lansing, Mich. (See pages 893 and 894.)
Mutual Wheel Co., 709 Third Ave., Moline, Ill.
Northern Wheel Co., Alma, Mich.
Novelty Carriage Works, 813 Second Ave., Spokane, Wash.
Royer Wheel Co., Aurora, Ind. (See page 1071.)
Schwarz Wheel Co., Margaret St., & Penna. R. R., Philadelphia, Pa.
Smith & Co., Geo. W., 49th & Botanic Ave., Philadelphia, Pa.
Standard Wheel Co., 13th & Plum Sts., Terre Haute, Ind.
Stone Mfg. Co., 1502 Michigan Ave., Chicago, Ill.
Wayne Wheel Co., Newark, N. Y. (See page 1071.)
Wheel & Wood Bending Co., 141 John St., Bridgeport, Conn.

WHEELS, Wood, for Fords

(For Demountable Wheels—See Wheels, Demountable)

Baltimore Hub Wheel & Mfg. Co., 221 Gay St., Baltimore, Md.
Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for Hayes Wheels.) (See page 125.)
Hayes Wheel Co., Horton St., Jackson, Mich.
Motor Wheel Corp., Lansing, Mich. (See pages 893 and 894.)
Mutual Wheel Co., 709 Third Ave., Moline, Ill.
Presto Inter-Rim Co., 940 Commonwealth Ave., Boston, Mass.
Royer Wheel Co., Aurora, Ind. (See page 1071.)
Schwarz Wheel Co., Margaret St., & Penna. R. R., Philadelphia, Pa.
Smith & Co., Geo. W., 49th St. & Botanic Ave., Philadelphia, Pa.
Standard Wheel Co., 13th & Plum Sts., Terre Haute, Ind.

WHIPCORD, Upholstery

American Mills Co., 395 Broadway, New York, N. Y.
American Woolen Co. of N. Y., 225 Fourth Ave., New York, N. Y.
Laidlaw Co., 16 W. 60th St., New York, N. Y. (See pages 253 and 617.)
Roy Woolen Co., 500 Broadway, Watervliet, N. Y.
Seamans & Cobb Co., Boston, Mass. "Seaco." (See page 775.)
Seaco—See Seamans & Cobb Co.
Strong Textile Co., 245 W. 55th St., New York, N. Y. (See page 251.)
Toledo Auto Fabrics Co., Toledo, O. (See page 251.)
Waterloo Woolen Mfg. Co., 228 E. Main St., Waterloo, N. Y.

WHISTLES, EXHAUST—See Horns, Exhaust

WHISTLES, EXPLOSION—See Horns, Exhaust

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Metal-Bound Wood Truck Wheels

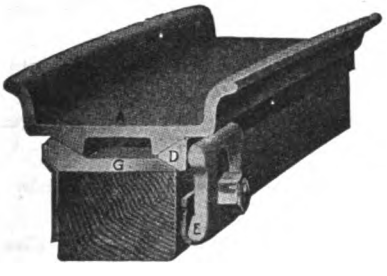
GUARANTEED TO OUTLAST ANY TRUCK
WRITE FOR CUTS AND QUOTATIONS

WAYNE WHEEL COMPANY
Newark, New York State

THE ROYER WHEEL CO.

wishes to announce that its entire plant is now devoted exclusively to the manufacture of

QUALITY AUTOMOTIVE WOOD WHEELS



FOR BOTH

TRUCK and PLEASURE CARS

The cut shows Firestone Type "E" Rim on our 32 x 4½ wheel, which is finding great favor in replacing the solid tires furnished with the 1-ton Ford truck. We carry these in stock and can make prompt shipment.

WRITE FOR DEALERS' PRICES

Pneumatic equipment on trucks cuts vibration and relieves road strain to such an extent that the load capacity can be increased 50 per cent, and the average speed of hauling can be increased at least 10 miles per hour.

This equipment consists of two 32 x 4½ truck wheels with Firestone Type "E" Demountable Rims, one extra rim and twelve hub bolts with each pair. These wheels are painted black, and are securely crated for shipment.

THE ROYER WHEEL CO.

FOUNDED 1848 AURORA, INDIANA

SMITH WHEELS, EVERLASTING

YOUR TRUCK will **run easier, last longer** and give **far greater mileage** from Tires and Gasoline, when equipped with SMITH WHEELS.

Guaranteed FOR LIFE OF TRUCK on which originally placed.

SMITH WHEEL, Inc., Syracuse, N. Y.

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WICKING, Candle

Estes Mills, Fall River, Mass. "Sterling."
Favorite—See Lees Mfg. Co.
La Favorite—See Lees Mfg. Co.
Lees Mfg. Co., 320 Broadway, New York, N. Y. "La Favorite," "Octagon."
Octagon—See Lees Mfg. Co.
Sterling—See Estes Mills.
Westport Mfg. Co., Fall River, Mass.

WICKING, Felt Lubricator

(For Sheet Felt—See Felt, Sheet; for Felt Washers—See Washers, Felt)

Advance Felt & Cutting Co., 815E. S. Jefferson St., Chicago, Ill. (See page 411.)
American Felt Co., 100 Summer St., Boston, Mass. (See page 411.)
Atlantic Felt Cutting Co., 93d St. and Fourth Ave., Brooklyn, N. Y. (See page 413.)
Booth Felt Co., 463-73 19th St., Brooklyn, N. Y. (See pages 409 and 410.)
Brawley, T. R., 275-77 20th St., Brooklyn, N. Y. (See pages 411 and 1053.)
Felters Co., Millbury, Mass. (See page 649.)
Lyons Felt Co., 338 Myrtle Ave., Dept. A., Brooklyn, N. Y. (See page 475.)
Western Felt Works, 4115-33 Ogden Ave., Chicago, Ill. (See page 1055.)

WICKING, LUBRICATOR—See Wicking, Felt Lubricator

WICKS, Lamp

Consolidated Duck Co., 86 Worth St., New York, N. Y.
Lees Mfg. Co., 320 Broadway, New York, N. Y.
Octagon—See Lees Mfg. Co.

WINCHES and BLOCKS, Car Extracting

(Devices for pulling cars out of mud or sand)

Alsteel Mfg. Co., 7-9 Carlyle St., Battle Creek, Mich. "Auto-Lad." (See page 351.)
Auto Accessories Co., Wheeling, W. Va. "Haberstick."
Auto Bed Camp Mfg. Co., 2207 Pennsylvania St., Kansas City, Mo. "Dublservis."
Auto Climb Out & Shovel Co., Havenrich Bldg., Saginaw, Mich.
Auto-Lad—See Alsteel Mfg. Co.
Auto Traction Trac Co., Berlin, N. J.
Cherry—See Laurent-Cherry Pulley Block Co.
Dublservis—See Auto Bed Camp Mfg. Co.
Haberstick—See Auto Accessories Co.
Keepers, J. C., 213 W. Park St., Olathe, Kans.
Laurent-Cherry Pulley Block Co., 110 Lafayette Ave., Trenton, N. J. "Cherry."
Pull-U-Out Products Co., 727 Clark Ave., St. Louis, Mo.
Rose Auto Puller Co., Rosemont, Neb.

WINCHES, Truck

(For applying to trucks to facilitate loading; for Truck Cranes—See Cranes, Truck.)

Bay City Foundry & Machine Co., 1610 Water St., Bay City, Mich. (See page 1095.)
Brownhoist—See Brown Hoisting Machinery Co.
Brown Hoisting Machinery Co., 4403 St. Clair Ave., Cleveland, O. "Brownhoist."
Channon Mfg. Co., James H., 222-32 W. Erie St., Chicago, Ill. (See page 127.)
Hendrickson Truck Crane Co., Peoples Gas Bldg., Chicago, Ill.
Mead-Morrison Mfg. Co., 1035 Prescott St. (E. Boston), Boston, Mass. (See page 1165.)
Memphis Pullblock Co., 938 Union Ave., Memphis, Tenn.
Truck Engineering Co., 7031 Broadway, Cleveland, O.

WIND SHIELD CLEANERS—See Cleaners, Glass Wind Shield; also Compounds, Glass Wind Shield

WIND SHIELD GLASS—See Glass, Polished Plate

WIND SHIELD HINGES—See Hinges, Wind Shield

WIND SHIELD SCREENS—See Screens, Wire Wind Shield

WIND SHIELD SPOTLIGHTS—See Lights, Spot

WIND SHIELD VENTILATORS—See Ventilators, Wind Shield

WIND SHIELD VISORS—See Visors and Rain Shield, Top

WIND SHIELD WEATHER STRIPS—See Strips, Wind Shield Weather

WIND SHIELD WINGS—See Shields, Auxiliary Wind

WIND SHIELD WIPERS—See Cleaners, Glass Wind Shield

WIND SHIELDS—See Shields, Wind

WINDINGS, ARMATURE—See Windings, Starter and Ignition

WINDINGS, FIELD COIL—See Windings, Starter and Ignition

WINDINGS, MAGNETO—See Windings, Starter and Ignition

WINDINGS, Starter and Ignition

Arrow Mfg. Co., 613-23 Broadway, Toledo, O.
Belden Mfg. Co., 2300 S. Western Ave., Chicago, Ill. (See page 1171.)
Dudlo Mfg. Co., Wall St., Fort Wayne, Ind.
Magneto Winding Co., 1723 Eighth Ave., Brooklyn, N. Y.

WINDOW GLASS—See Glass, Polished Plate

WINDOW REGULATORS—See Regulators, Window

WINDOWS, CURTAIN — See Windows, Glass Curtain

WINDOWS, CURTAIN, FOR FORDS—See Lights, Curtain

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PERFECTION

Beveled Glass Curtain Windows

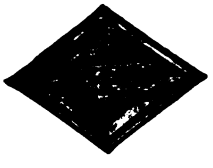
The Complete Line—60 Styles—A Style to Suit Every Requirement

Perfection Windows offer the last word in finished motor car curtain windows.

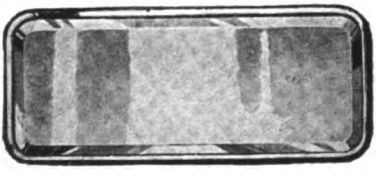
Used on side and rear curtains they beautify and bring up to date the oldest cars as well as complete new car equipment.

THE PERFECTION TYPE WINTER ENCLOSURE is the first practical and really fine-appearing winter enclosure designed for open cars. Rapidly displacing other types. Quick and easy to build. Write for complete circular.
Perfection Curtain Windows are used as standard equipment by car manufacturers.

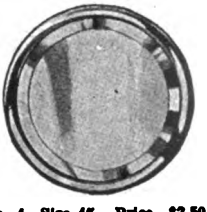
All live jobbers and dealers carry stock. Naturally they are preferred by high-grade trimmers and top makers.



No. 19—Size 7x5". Price $3.20
No. 22—Size 10x7½". Price 4.50

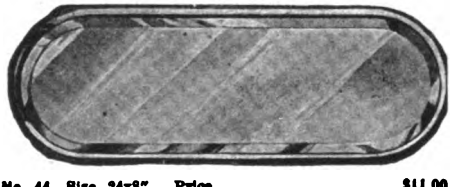


No. 27—Size 20x6". Price.....$ 8.00
No. 36—Size 20x8". Price..... 9.00
No. 47—(Packard Roadster.) Size 12⅝x9⅝". Price..... 10.50
No. 57—Size 24x6". Price..... 8.50

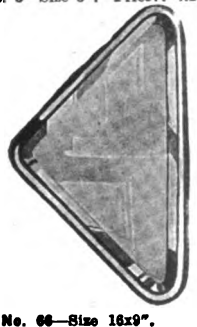


No. 4—Size 4". Price..$2.50
No. 6—Size 6". Price.. 3.00
No. 8—Size 8". Price.. 4.25

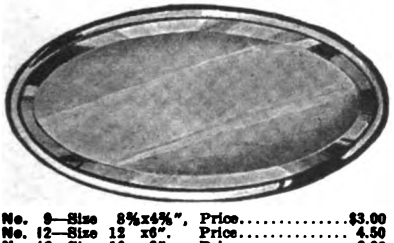
No. 101—Right and Left. Size 9x10". Price..$7.75



No. 44—Size 24x8". Price.....$11.00
No. 45—(Pierce-Arrow.) Size 32x8". Price..... 16.00
No. 51—Size 9x4½". Price..... 4.00
No. 53—Size 18x6". Price..... 7.50
No. 55—Size 24x6". Price..... 8.50



No. 66—Size 16x9".
Price.....$8.00



No. 9—Size 8⅝x4⅝", Price.....$3.00
No. 12—Size 12 x6". Price..... 4.50
No. 16—Size 16 x8". Price..... 6.00
No. 20—Size 19¼x10". Price..... 9.50

No. 48—Size 8x4". Price.....$4.00
No. 50—Size 12x5". Price..... 5.50
No. 52—Size 16x6". Price..... 7.00
No. 54—Size 24x6". Price..... 9.00

We also furnish glass of every kind for automobiles, windshield glass, sedan and limousine glass and headlight glass.

No. 56—Size 24x6". Price.....$9.00

THE PERFECTION COMPANY

400 W. Ohio St. CHICAGO, ILLINOIS

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WINDOWS, Glass Curtain

(Bevel glass window with metal and wood frame for use in place of celluloid lights in top curtains)

A. L. Z.—See Auto Curtain Glass Co.

Auto Curtain Glass Co., 383 Shrewsbury St., Worcester, Mass. "A. L. Z."

Campbell Co., A. S., 276 Commercial St., Boston, Mass. "Cello."

Cello—See Campbell Co.

Classic—See Smith & Co.

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 545.)

Glass Curtain Top Co., 4631 John R St., Detroit, Mich.

Ideal—See Metal Stamping Co.

Johnston Mfg. Co., William R., 451-460 E. Ohio St., Chicago, Ill. (See page 1075.)

Kantleak—See Scherer & Co.

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y. "Ideal."

Perfection Auto Window Co., 6527 Featherstone St., Culver City, Cal.

Perfection Co., 400 W. Ohio St., Chicago, Ill. (See page 1073.)

Powers Mfg. Co., Waterloo, Iowa. (See page 593.)

Scherer & Co., H., 440 E. Jefferson Ave., Detroit, Mich. "Kantleak."

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich. "Classic."

Snaplock Co., Guardian Bldg., Cleveland, O.

W. B.—See Wildenberg Bros.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 1097.)

Wildenberg Bros., 356 W. 50th St., New York, N. Y. "W. B."

Wisconsin Auto Top Co., Racine, Wis. (See page 317.)

WING COATINGS, AIRPLANE—See Coatings, Airplane Wing; also Varnish, Airplane

WING NUTS—See Nuts, Thumb

WING SCREWS—See Screws, Thumb

WING SOCKET PLATES, Airplane—See Plates, Airplane Wing Socket

WINGS, GLASS WINDSHIELD — See Shields, Auxiliary Wind

WIPERS and POLISHING CLOTHS

(For Cotton Waste—See Waste, Cotton)

Acme Mills Co., 1337 Beaubien St., Detroit, Mich.

American Manufacturers Supply Co., 1401-15 Orleans St., Detroit, Mich.

American Mill Ends Co., 1934 Gratiot Ave., Detroit, Mich.

Basco—See Baylis Sanitary Supply Co.

Baylis Sanitary Supply Co., 341 W. Superior St., Chicago, Ill. "Basco."

Blakeley & Son., John, 1089 Germantown Ave., Philadelphia, Pa.

Blank, Irving, 727 Seventh Ave., New York, N. Y.

Cadillac Paper Co., 191 E. Hancock Ave., Detroit, Mich.

Chicago Sanitary Rag Co., 2137-43 S. Loomis St., Chicago, Ill.

Columbus Washed & Sterilized Wiper Co., 86 W. Maple St., Columbus, O.

Consumers Paper Co., 555 Beaufait Ave., Detroit, Mich. "Worthmore."

Corner, Edward, 1030 Beach St., Philadelphia, Pa.

Detroit Mill Ends Co., 562 Gratiot Ave., Detroit, Mich.

Fidelity—See Hagy Waste Works.

Fulton Bag & Cotton Mills, 330 Wythe Ave., Brooklyn, N. Y.

Gross & Co., E., 90-96 Avon St., Hartford, Conn.

Hagy Waste Works, J. Milton, Philadelphia, Pa. "Fidelity." (See page 695.)

Hagy & Son, Clayton L. 16th & Carpenter Sts., Philadelphia, Pa.

Hoffman-Corr Mfg. Co., 318 Lafayette St., New York, N. Y.

Imperial—See Rath Mfg. Co.

Klein Waste Products Corp., 73-75 Church St., Albany, N. Y.

Lyman Co., John R., 119 Liberty St., Springfield, Mass.

Marvel Accessories Mfg. Co., 1220 W. Sixth St., Cleveland, O.

Masco—See Massasoit Mfg. Co.

Massasoit Mfg. Co., 134 Pocasset St., Fall River, Mass. "Masco."

Mill Remnants Co., 19 Bond St., New York, N. Y. "Mireco."

Mireco—See Mill Remnants Co.

North & Son, Jos. W., Sixth St., Elizabeth, N. J.

Northwestern Sanitary Wiping Rag Co., 1015 Holden St., Chicago, Ill.

Oil & Waste Saving Machine Co., Real Estate Trust Bldg., Philadelphia, Pa.

Peerless Sanitary Wiping Materials Co., 367-73 Fulton St., Brooklyn, N. Y.

Quality—See Sanitary Wiping Cloth Co.

Rath Mfg. Co., Hedley & Richmond Sts., Philadelphia, Pa. "Imperial."

Royal Mfg. Co., Rahway, N. J. (See page 1059.)

Sani-Mist Co., 16 Home St., New London, Conn.

Sanitary Wiping Cloth Co., 2261 S. Union Ave., Chicago, Ill. "Quality."

Scheinman & Co., I. L., 974 Sherman St., Detroit, Mich.

Standard Waste Mfg. Co., 2306-10 N. American St., Philadelphia, Pa.

Standard Waste & Bag Co., 234 W. 27th St., New York, N. Y.

Stevenson Bro. & Co., 110 Race St., Philadelphia, Pa.

Trunsky & Co., Peter, 1001 Adelaide St., Detroit, Mich.

Worthmore—See Consumers Paper Co.

WIRE, Airplane Stream Line

Macwhite Co., Kenosha, Wis.

WIRE BELTS—See Belts, Spiral Wire

WIRE BROOMS—See Brooms, Steel Wire

WIRE BRUSHES—See Brushes, Wire

WIRE BUFFING BRUSHES—See Brushes, Wire Buffing

WIRE CABLE—See Rope

WIRE CLOTH—See Cloth, Wire

WIRE FERRULES, AIRPLANE—See Thimbles and Ferrules, Airplane Wire

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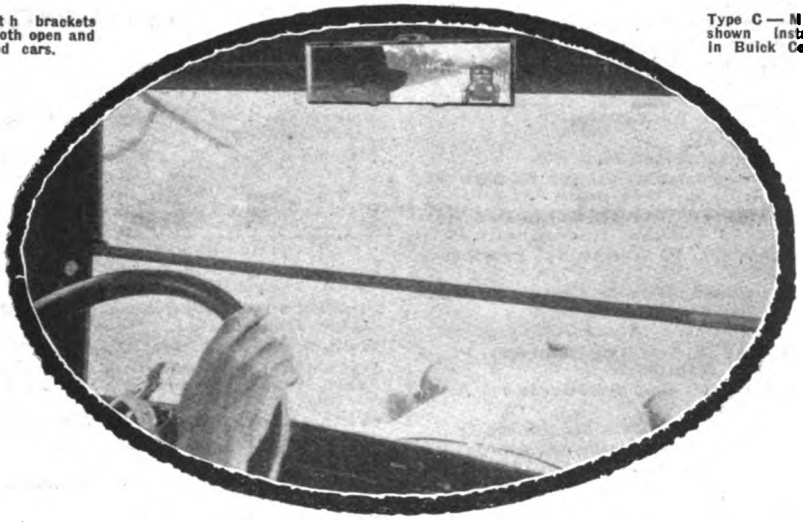

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WIRE, FLEXIBLE CONTROL—See Cable, Flexible Control

WIRE GAGES—See Gages, Drill and Wire

WIRE, Insulated

(Including ignition wires and cables, starter cables and wire for lighting circuits)

American Brass Co., Waterbury, Conn. (See page 165.)

American Electrical Works, Phillipsdale, R. I.

American Steel & Wire Co., Chicago, Ill. "Amerite," "Americore." (See page 829.)

Americore—See American Steel & Wire Co.

Amerite—See American Steel & Wire Co.

B. I. W.—See Boston Insulated Wire & Cable Co.

Belden Mfg. Co., 2300 S. Western Ave., Chicago, Ill. "Beldenmold." (See page 1171.)

Beldenmold—See Belden Mfg. Co.

Bishop Gutta-Percha Co., 420 E. 26th St., New York, N. Y. (See page 991.)

Boston Insulated Wire & Cable Co., Boston, Mass. "B. I. W." (See page 937.)

Bourn Rubber Co., 58 Warren St., Providence, R. I. "Star."

Crescent Insulated Wire & Cable Co., Olden Ave. & Taylor St., Trenton, N. J.

Ecco—See Habirshaw Electric Cable Co.

Empire Rubber & Tire Co., Mulberry St. & Clinton Ave., Trenton, N. J.

General Electric Co., Schenectady, N. Y. (See page 793.)

Goodrich Co., B. F., S. Main St., Akron, O.

Goodrich-Lenhart Mfg. Co., Hamburg, Pa. "M. P." (See page 721.)

Habirshaw Electric Cable Co., Yonkers, N. Y. "Ecco."

Hazard Mfg. Co., 81 E. Ross St., Wilkes-Barre, Pa.

Indiana Rubber & Insulated Wire Co., Jonesboro, Ind. "Paranite."

Kerite Insulated Wire & Cable Co., New York, N. Y. (See page 1077.)

MP—See Goodrich-Lenhart Mfg. Co.

National India Rubber Co., Bristol, R. I.

New York Insulated Wire Co., 114 Liberty St., New York, N. Y.

Okonite Co., Passaic, N. J.

Packard Electric Co., Warren, O. (See page 1077.)

Paranite—See Indiana Rubber & Insulated Wire Co.

Rex Ignition Mfg. Co., 250 W. 54th St., New York, N. Y.

Roebling's Sons Co., John A., S. Broad & Canal Sts., Trenton, N. J.

Rome Wire Co., Rome, N. Y. (See page 939.)

Safety Insulated Wire & Cable Co., 114 Liberty St., New York, N. Y.

Simplex Wire & Cable Co., 201 Devonshire St., Boston, Mass.

Standard Underground Cable Co., Westinghouse Bldg., Pittsburgh, Pa.

Star—See Bourn Rubber Co.

White, J. M., 1116-22 Olive St., Philadelphia, Pa. (See page 849.)

Whitney Blake Co., New Haven, Conn.

WIRE, Phosphor Bronze

American Brass Co., Waterbury, Conn. (See page 165.)

Omega—See Riverside Metal Co.

Phosphor Bronze Smelting Co., 2200 Washington Ave., Philadelphia, Pa.

Riverside Metal Co., Riverside, N. J. "Omega."

WIRE PROTECTORS, AIRPLANE—See Protectors, Rubber Fuselage Wire

WIRE ROPE—See Rope, Wire

WIRE ROPE CLAMPS—See Clamps, Wire Rope

WIRE SOLDER—See Solder, Bar and Wire

WIRE SPOKES—See Spokes, Wire

WIRE, SPRING—See Wire, Steel Spring

WIRE, Steel Spring

American Steel & Wire Co., Chicago, Ill. (See page 829.)

Blancke Co., L. C., 10-12 Thomas St., New York, N. Y. (Sole Distributors for Blancke Steel Co., Taunton, Mass.)

Blancke Steel Co.—See Blancke Co.

Helmuth Co., L., 17 Battery Pl., New York, N. Y. (Importers.)

Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill. (See page 915.)

Roebling's Sons Co., John A., S. Broad & Canal Sts., Trenton, N. J.

Trenton Iron Co., Trenton, N. J.

Wickwire-Spencer Steel Corp., Worcester, Mass. (See pages 829 and 909.)

WIRE STREAMLINING, AIRPLANE—See Streamlining, Airplane Wire

WIRE TERMINALS—See Terminals, Wire

WIRE THIMBLES, AIRPLANE—See Thimbles and Ferrules, Airplane Wire

WIRE TIMER GUARDS FOR FORDS—See Guards, Timer Wire

WIRE WHEELS—See Wheels, Wire

WIRE WRAPPING MACHINES, AIRCRAFT—See Machines, Aircraft Wire Wrapping

WIRING ASSEMBLIES FOR FORDS—See Sets, Wiring

WIRING CHARTS, ELECTRIC—See Charts, Electric Wiring

WIRING CLEATS—See Cleats, Fibre Wiring

WIRING CONDUIT—See Conduit, Flexible Car Wiring

WIRING HARNESS FOR FORDS—See Sets, Wiring

WIRING, IGNITION, FOR FORDS—See Sets, Wiring

WIRING MACHINES—See Machines, Fender Wiring

WIRING SETS FOR FORDS—See Sets, Wiring

WOOD BENDINGS—See Bendings, Wood

WOOD BODIES—See Bodies, Wood

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WOOD DASHES—See Dashes, Wood

WOOD FILLERS, AIRCRAFT—See Fillers, Aircraft Wood

WOOD MUD GUARDS—See Fenders or Mud Guards, Wood

WOOD PANELS—See Panels, Wood

WOOD PARTS—See Parts, Wood

WOOD PLANERS—See Planers, Wood

WOOD PRIMERS, AIRCRAFT—See Primers, Aircraft Wood

WOOD SCREWS—See Screws, Wood

WOOD SHAPERS—See Shapers, Wood

WOOD TRUCK CABS—See Cabs, Wood Truck

WOOD WHEEL TIGHTENING COMPOUNDS—See Compounds, Wood Wheel Tightening

WOOD WHEELS—See Wheels, Wood

WOOL, Steel

American Steel Wool Mfg. Co., 451 Greenwich St., New York, N. Y. "Ideal."

Buehne Steel Wool Co., 93 Nassau St., New York, N. Y.

Ideal—See American Steel Wool Mfg. Co.

Rhodes & Co., James H., 513 W. Austin Ave., Chicago, Ill.

WORM DRIVE REAR AXLES—See Axles, Worm Drive Rear

WOVEN BELTS—See Belts

WRAPPING MACHINES—See Machines, Tire Bandage Wrapping

WRAPPING MACHINES, WIRE AIRCRAFT—See Machines, Aircraft Wrapping

WRECKING CASTORS—See Trucks, Castors and Spare Wheels, Wrecking

WRECKING SPARE WHEELS—See Trucks, Castors and Spare Wheels, Wrecking

WRECKING TRUCKS—See Trucks, Castors and Spare Wheels, Wrecking

WRENCHES, ADJUSTABLE — See Wrenches, Nut and Bolt

WRENCHES, ALLIGATOR—See Wrenches, Nut

WRENCHES, BOLT—See Wrenches, Nut

WRENCHES, DROP FORGED—See Wrenches, Nut

WRENCHES, Grease Cup

Stepanian Mfg Co., Columbus, O.

Staff, J. Wadsworth, 123 S. Michigan Ave., Chicago, Ill. (Dealers.) (See pages 1177 and 1193.)

WRENCHES, Hub Cap, for Fords

Edelmann & Co., E., 2633 N. Crawford St., Chicago, Ill.

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 545.)

Metal Stamping Co., 13th St. & East Ave. Long Island City, N. Y.

Mossberg Co., Frank, Attleboro, Mass.

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)

Oakes Co., Indianapolis, Ind. (See page 405.)

WRENCHES, MONKEY—See Wrenches, Nut and Bolt

WRENCHES, Nut and Bolt

Alderman—See Mossberg Co.

Allan & Co., A. C., Morris, Ill.

Allen Wrench & Tool Co., Public & Eddy Sts., Providence, R. I.

All-Purpose—See Motor Parts Co.

American Grinder Mfg. Co.—See Jonas, C. N. & F. W.

American Pulley Co., 4200 Wissahickon Ave., Philadelphia, Pa.

Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. "Sixset." (See page 81.)

Armstrong Bros. Tool Co., 304 N. Francisco Ave., Chicago, Ill. (See page 1007.)

Arrow Tool Co., Buffalo, N. Y.

Art Metal Works, Aronson Sq., Newark, N. J. "Ronson." (See page 503.)

Atco Wrench Co., 127 E. Spring St., Lima, O.

Athol Machine Co., Athol, Mass.

Auto Cle—See Mossberg Co.

Auto Queen—See C. M. B. Wrench Co.

B. & C.—See Bemis & Call Hardware & Tool Co.

Barcalo Mfg. Co., 225 Louisiana St., Buffalo, N. Y. "King Dick."

Bay State Autokit—See Shultis Automotive Corp.

Bay State Pump Co.—See Shultis Automotive Corp.

Becco—See Michigan Motor Specialties Co.

Bemis & Call Hardware & Tool Co., 283 Main St., Springfield, Mass. "B. & C."

Bergman Tool Mfg. Co., 1573-75 Niagara St., Buffalo, N. Y. "Queen City."

Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn.

Billmont—See Guthard Co.

Blackhawk—See Jonas, C. N. & F. W.

Bonney Vise & Tool Works, Allentown, Pa. (See page 437.)

Bornstein & Co., Ipswich, Mass.

Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.

Buckeye—See Central Brass & Fixture Co.

Buffum Tool Co., Louisiana, Mo. (See page 529.)

C. M. B. Wrench Co., Garwood, N. J. "Silver King," "Auto Queen."

C. M. & D.—See Chicago Mfg. & Distributing Co.

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Caldwell Tool Mfg. Co., 87 Warren St., New York, N. Y.

Carll—See Robinson Co.

Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."

Champion—See Syracuse Wrench Co.

Chicago Mfg. & Distributing Co., 411 S. Sangamon St., Chicago, Ill. "C. M. & D."

Code Mfg. Co., Chicago, Ill. (See pages 857 and 1155.)

Coes Wrench Co., Coes Sq., Worcester, Mass.

Crescent Mfg. Co., 129 Reade St., New York, N. Y. (See page 1207.)

Crescent Tool Co., 204 Harrison St., Jamestown, N. Y.

Crocodile—See Lakeside Forge Co.

Cushman Co., Inc., Champaign, Ill. (See page 635.)

Diamond—See Ferodowill Mfg. Co.

Diamond—See Mossberg Co.

Diamond Jay Dee Co., 1400 Michigan Ave., Chicago, Ill. (See page 569.)

Diebel, A. J., 976 Woodward Ave., Detroit, Mich. (Michigan, Indiana and Ohio Distributors for Cushman Wrenches.) (See page 543.)

Easy Way—See Lawrence Mfg. Co.

Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Sales Department for Rosel Co., Wm. E., Columbus, O. "5 in 1.")

Edelmann & Co., E., 2633 N. Crawford Ave., Chicago, Ill. "Sexto-Rench." "Han-D."

Efficiency Device Corp., 193 Eighth St., Long Island City, N. Y.

Efficient Vise & Wrench Co., 4207 Clark Ave., Cleveland, O.

Erie Tool Works, 11th & French Sts., Erie, Pa.

Evans Mfg. Co., 620-22 E. 63rd St., Chicago, Ill.

Ever-Ready—See Lakeside Forge Co.

Fairmount Tool & Forging Co., 10611 Quincy Ave., Cleveland, O.

Faw, J. H., 27 Warren St., New York, N. Y. "Fawsco." (See page 241.)

Fawsco—See Faw, J. H.

5 in 1—See Eckhouse & Co., Walter.

Gogle Hand—Forged Tool Co., 1941 Polk St., San Francisco, Cal.

Goodell-Pratt Co., Greenfield, Mass.

Gray-Heath Co., 1440 S. Michigan Ave., Chicago, Ill. (See page 741.)

Gripsall—See Mossberg Co.

Guernsey, C. C., Derry, N. H.

Guthard Co., Edgar C., 861 E. Ohio St., Chicago, Ill. "Billmont."

Han-D—See Edelmann & Co.

Handy—See Lakeside Forge Co.

Harris & Reed Mfg. Co., 1510-22 W. 15th St., Chicago, Ill.

Hawkeye—See Lakeside Forge Co.

Helwig Mfg. Co., Seventh & Locust Sts., St. Paul, Minn.

Herbrand Co., 109-25 E. State St. Fremont, O

Hergi Mfg. Co., Bridgeport, Conn.

Hexall—See Sedgley, R. F.

Hill Pump Valve Co.—See Zinke Co.

Hjerth & Co., Wm., 28 Taylor St., Jamestown, N. Y.

Holley Tool Mfg. Co., 1011 S. 12th St., Omaha, Neb.

Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributor for "King Dick" Wrenches.) (See page 1187.)

Humboldt—See Republic Auto Parts Co.

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representative for American Grinder Mfg. Co., Milwaukee, Wis. "Blackhawk.")

Ketler-Elliott Co., 3153 S. California Ave., Chicago, Ill.

Keystone Mfg. Co., 41 Chandler St., Buffalo, N. Y. "Westcott."

Kilborn & Bishop Co., Chapel & Lloyd Sts., New Haven, Conn. "Saxon."

King Dick—See Barcalo Mfg. Co.

King Pressed Steel & Mfg. Co., 13 Hawthorne St., Newton, Mass.

Kokomo Wrench Co., Kokomo, Ind.

Kraemer & Co., Newark, N. J. (See page 711.)

L. & L. Mfg. Co., 134 High St., Newark, N. J.

Lakeside Forge Co., Erie, Pa. "Crocodile," "Ever-Ready," "Handy," "Hawkeye." (See page 1161.)

Lamson & Sessions Co., 2188 Scranton Rd., Cleveland, O.

Larco Wrench & Mfg. Corp., 7800 Woodlawn Ave., Chicago, Ill.

Larson Tool & Stamping Co., Olive St., Attleboro, Mass.

Lawrence Mfg. Co., F. K., 613-615 First National Bank Bldg., Chicago, Ill. "Easy Way." (See page 1179.)

Lowell Wrench Co., 54 Commercial St., Worcester, Mass.

Lutz Co., Morris-Bambrey & Moore Sts., Philadelphia, Pa. (See page 651.)

McKaig Drop Forge Co., 14 Perry St., Buffalo, N. Y.

Martin & Co., Edward, 23 S. Clinton St., Chicago, Ill. "Perfection."

Marvel Accessories Mfg. Co., 1220 W. Sixth St., Cleveland, O.

Masco—See Mayer Auto Specialty Co.

Mayer Auto Specialty Co., 452-54 Elliott Sq., Buffalo, N. Y. "Masco." (See page 1165.)

Mayhew Steel Products, 291 Broadway, New York, N. Y.

Michigan Motor Specialties Co., 130 Mt. Elliott Ave., Detroit, Mich. "Becco."

Miller Tool & Mfg. Co., 1725 16th St., Detroit, Mich. (See page 1167.)

Miller Wrench Co., 1054-56 S. Clinton St., Syracuse, N. Y.

Mossberg Co., Frank, Attleboro, Mass. "Sterling," "Diamond," "Alderman," "National," "Auto Cle," "Gripsall."

Motor Parts Co., Ambridge, Pa. "All-Purpose."

National—See Mossberg Co.

National Jack & Mfg. Co., 130-34 S. Clinton St., Chicago, Ill.

Necedah Mfg. Co.—See Jonas, C. N. & F. W.

New Britain Mfg. Co., 216 S. Main St., New Britain, Conn.

New England Forge Co., 8 Plymouth St., Worcester, Mass.

New England Pressed Steel Co., Washington Ave., Natick, Mass.

Niagara Falls Metal Stamping Works, 235-47 Tenth St., Niagara Falls, N. Y. "Pokitrenchis."

Packer Auto Specialty Co., 1420 S. Michigan Ave., Chicago, Ill. "Ray."

Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."

Peerless Wrench Co., 93 Sprague St., Providence, R. I.

Perfect Handle—See Smith & Co.

Perfection—See Martin & Co.

Pexto—See Peck, Stow & Wilcox Co.

Pick-Up—See New Britain Mfg. Co.

Pokitrenchis—See Niagara Falls Metal Stamping Works.

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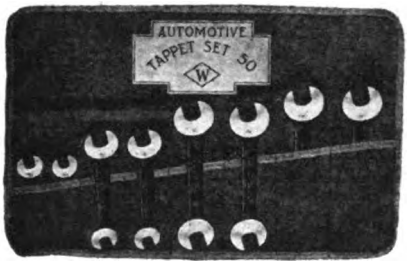

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WRENCHES, Nut and Bolt (Continued)

Quaker Tool Co., 120 W. Venango St., Philadelphia, Pa.

Queen City—See Bergman Tool Mfg. Co.

Radco—See Stadeker Metal Specialty Co.

Ray—See Packer Auto Specialty Co.

Red Chief Mfg. Co., Louisville, Ky. "L. G."

Red Devil—See Smith & Hemenway.

Republic Auto Parts Co., 31-35 Tenth St., Long Island City, N. Y. "Humboldt," "Sterling."

Robinson Co., M. W., 296 Broadway, New York, N. Y. "Carll." (See page 1083.)

Ronson—See Art Metal Works.

Rosel Co.—See Eckhouse & Co.

S. & I. Co., 55-57 Governor St., Springfield, Mass.

Saxon—See Kilborn & Bishop Co.

Scholler Mfg. Co., 147 Leslie St., Buffalo, N. Y.

Shultis Automotive Corp., 16-22 W. 61st St., New York, N. Y. (Sole Distributors for Bay State Pump Co., So. Boston, Mass. "Bay State Autokit" and "Stickit.") (See page 609.)

Sedgley, R. F., 2311-13 N. 16th St., Philadelphia, Pa. "Hexall."

Sexto-Rench—See Edelmann & Co.

Shaw Propeller Co., 574 Cambridge St., Allston, Mass.

Silver King—See C. M. B. Wrench Co.

Sixset—See Armand Machine Works.

Smith & Co., H. D., Plantsville, Conn. "Perfect Handle."

Smith & Hemenway, 130 Colt St., Irvington, N. J. "Red Devil."

Snap-On Wrench Co., 134 Reed St., Milwaukee, Wis.

Stadeker Metal Specialty Co., 310 S. Canal St., Chicago, Ill. "Radco."

Staff Bros. Co., 1765 Broadway, New York, N. Y.

Standard Tool Co., 6900-24 Central Ave., Cleveland, O.

Star Mfg. Co., Carpentersville, Ill.

Starrett Co., L. S., Athol, Mass.

Sterling—See Mossberg Co.

Sterling—See Republic Auto Parts Co.

Stickit—See Shultis Automotive Corp.

Superior—See Williams & Co.

Syracuse Wrench Co., 501 E. Water St., Syracuse, N. Y. "Champion."

Trimo—See Trimont Mfg. Co.

Trimont Mfg. Co., 55 Amory St., Roxbury, Mass. "Trimo."

Unique Tool Co., 180 N. Dearborn St., Chicago, Ill. (See page 1083.)

Utility—See Zinke Co.

Vichek Tool Co., Cleveland, O.

Wakefield, C. E., 89 Exchange St., Worcester, Mass. "Wizard." (See page 1101.)

Walden - Worcester, Inc., Worcester, Mass. (See page 1079.)

Whitaker Mfg. Co., Chicago, Ill. (See page 1177.)

Williams & Co., J. H., 38 Richards St., Brooklyn, N. Y. "Superior." (See page 1081.)

Wizard—See Wakefield, C. E.

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Hill Pump Valve Co., Chicago, Ill. "Utility.") (See page 309.)

WRENCHES, Oil Cock, for Fords

(For opening or closing crank case drain cock or oil test cock without getting under car)

American Automatic Devices Co., 515 W. Monroe St., Chicago, Ill. "Original." (See page 643.)

Auto Metal Parts Co., 624 Michigan Ave., Chicago, Ill.

Bayne Mfg. Co., Bushnell, Ill. (See page 725.)

Brocksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.

Dow Wire & Iron Works, Louisville, Ky. (See page 157.)

Faw, J. H., 27 Warren St., New York, N. Y. "Fawsco." (See page 241.)

Fawsco—See Faw, J. H.

Gahm-McCormick Co., 906 E. Main St., Streator, Ill. (See page 1139.)

Handy Products Co., Erie Bldg., Cleveland, O.

Kees Mfg. Co., F. D., 24 High St., Beatrice, Neb.

Mac-Dan Co., 2414 Indianola Ave., Columbus, O.

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)

Original—See American Automatic Devices Co.

Radco—See Stadeker Metal Specialty Co.

Stadco—See Stadeker Metal Specialty Co.

Stadeker Metal Specialty Co., 310 S. Canal St., Chicago, Ill. "Stadco."

W-A—See Whetstone & Co.

Whetstone & Co., John H., Court St., Lapeer, Mich. "W-A."

WRENCHES, OPEN END—See Wrenches, Nut

WRENCHES, Pipe

Armstrong Mfg. Co., 335 Knowlton St., Bridgeport, Conn.

Bonney Vise & Tool Works, Allentown, Pa. "Vixen." (See page 437.)

Cochran—See Larco Wrench & Mfg. Corp.

Como—See Mechanical Specialties Co.

Efficient Vise & Wrench Co., 4207 Clark Ave., Cleveland, O.

Erie Tool Works, 11th & French Sts., Erie, Pa.

Greenfield Tap & Die Corp., Greenfield, Mass. (See page 927.)

Hjorth & Co., Wm., 28 Taylor St., Jamestown, N. Y.

Ideal—See Kroeschell Bros. Co.

Keystone Mfg. Co., 41 Chandler St., Buffalo, N. Y. "Westcott."

Kroeschell Bros. Co., 444 W. Erie St., Chicago, Ill. "Ideal."

Larco Wrench & Mfg. Corp., 7800 Woodlawn Ave., Chicago, Ill. "Cochran."

Leader—See Ripley Pipe Wrench Co.

Lutz-Webster Engineering Co., 31st St. & Grays Ferry Rd., Philadelphia, Pa.

Mechanical Specialties Co., 122 S. Michigan Ave., Chicago, Ill. "Como."

Moore Drop Forging Co., 336 Birnie Ave., Springfield, Mass.

Oswego Tool Co., 119-27 W. First St., Oswego, N. Y.

Page-Storms Drop Forge Co., Chicago, Ill.

Perfect Handle—See Smith & Co.

Ripley Pipe Wrench Co., Ripley, N. Y. "Leader."

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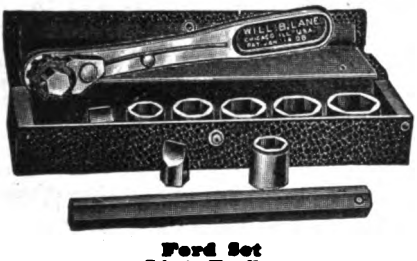

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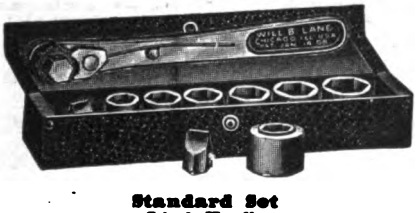

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WRENCHES, Pipe (Continued)

Shaw Propeller Co., 574 Cambridge St., Allston, Mass.

Smith & Co., H. D., Plantsville, Conn. "Perfect Handle."

Stillson—See Walworth Mfg. Co.

Trimo—See Trimont Mfg. Co.

Trimont Mfg. Co., 55 Amory St., Roxbury, Mass. "Trimo."

Vixen—See Bonney Vise & Tool Works.

Vulcan—See Williams & Co.

Wakefield, C. E., 89 Exchange St., Worcester, Mass. (See page 1101.)

Walworth Mfg. Co., 998 First St., Boston, Mass. "Stillson."

Westcott—See Keystone Mfg. Co.

Whitaker Mfg. Co., Chicago, Ill. (See page 1177.)

Williams & Co., J. H., 88 Richards St., Brooklyn, N. Y. "Vulcan." (See page 1081.)

WRENCHES, REAMER — See Wrenches, Nut

WRENCHES, SOCKET—See Wrenches, Nut

WRENCHES, SOLID—See Wrenches, Nut

WRENCHES, SPARK PLUG — See Wrenches, Nut

WRENCHES, Special, for Fords

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Allen Wrench & Tool Co., Public & Eddy Sts., Providence, R. I. "Eureka."

Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. (See page 81.)

Auto Mechanics Tool Co., 2501 S. Washington St., Peoria, Ill. "Peoria."

Bay State Autokit—See Bay State Pump Co.

Bay State Pump Co., 500 E. First St. (S. Boston), Boston, Mass. "Bay State Autokit."

Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn.

Bilmont—See Guthard Co.

C. M. B. Wrench Co., Garwood, N. J.

Danielson Tool Co., Fulton St., Wausau, Wis.

Eureka—See Allen Wrench & Tool Co.

Faw, J. H., 27 Warren St., New York, N. Y. "Fawsco." (See page 241.)

Fawsco—See Faw, J. H.

Graham Roller Bearing Co., Coudersport, Pa. (See page 283.)

Guthard Co., Edgar C., 861 E. Ohio St., Chicago, Ill. "Bilmont."

Harris & Reed Mfg. Co., 1510-22 W. 15th St., Chicago, Ill.

Hill Pump Valve Co.—See Zinke Co.

Helmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributor for Graham Wrenches.) (See page 1137.)

Improved Gauge Mfg. Co., 105 Canal St., Syracuse, N. Y. (See page 441.)

Ketler-Elliott Co., 3153 S. California Ave., Chicago, Ill.

Miller Wrench Co., 1054-56 S. Clinton St., Syracuse, N. Y.

Mitchell Wrench Co., 1828 N. 17th St., St. Louis, Mo.

Mossberg Co., Frank, Attleboro, Mass.

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 1135.)

New England Pressed Steel Co., Washington Ave., Natick, Mass.

Packer Auto Specialty Co., 1420 S. Michigan Ave., Chicago, Ill. "Ray."

Peoria—See Auto Mechanics Tool Co.

Southern Machine & Tool Co.—See Tuthill Sales Co.

Standard Motor Parts Co., 1420 S. Michigan Ave., Chicago, Ill. (Sole Distributors for Packer Auto Specialty Co., Chicago, Ill. "Ray.")

Tuthill Sales Co., St. Louis, Mo. (Sole Distributors for Southern Machine & Tool Co., St. Louis, Mo.) (See page 620.)

Unique Tool Co., 180 N. Dearborn St., Chicago, Ill. (See page 1083.)

Universal Mfg. Co., 2638 Randolph St., Lincoln, Neb.

Utility—See Zinke Co.

Walden - Worcester, Inc., Worcester, Mass. (See page 1079.)

Williams & Co., J. H., 88 Richards St., Brooklyn, N. Y. (See page 1081.)

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Hill Pump Valve Co., Chicago, Ill. "Utility.") (See page 309.)

WRIST WATCHES, AVIATORS'—See Watches, Aviators' Wrist

WROUGHT STEEL WHEELS—See Wheels, Pressed and Wrought

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SECTION 3

Reference Tables data, formulae, reports on tests and S. A. E. standards. Directory of National Trade Associations.

A complete Index to this section will be found on the pages immediately following.

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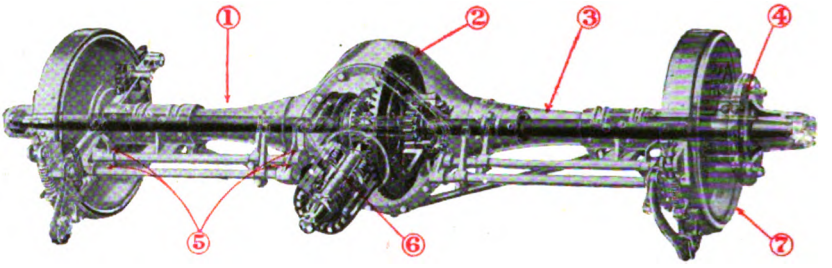

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SECTION III.

Tables and Data

Nine Horsepower Formulas

One horsepower (HP or hp) is the unit denoting the power required for raising 33,000 lb 1 ft. in 1 minute, or 550 lb. 1 ft. in 1 second, etc. It equals very nearly 0.746 kw (kilowatt) in electric power measurement. Under the metric system 1 hp equals 0.736 kw or 75 kgm (kilogram-meters) per second. The French hp (*cheval-vapeur*), as well as the German hp (*Pferdestärke* or *Pferdekraft*), thus equals 0.9866 American or British hp or 542.48 foot-pounds per second.

The actual power capacity of an automobile, motor-boat or airplane engine is ascertained by brake-block test or by other means for offering measurable resistance to its work. The term "indicated horsepower," as used for steam engines, is not properly applicable.

A horsepower formula expressing actual power capacity approximately (for a four-cycle engine), if a good value for P is known from current engine practice and tests, may be written

$$(1) \quad \text{Horsepower} = \frac{N}{4} \times \frac{3.1416 \ D^2P \times SR}{24 \times 33{,}000}$$

in which N is the number of cylinders, D the bore diameter in inches, P the mean effective pressure per square inch for the power stroke, S the stroke in inches and R the number of engine revolutions per minute. In the case of a four-cylinder engine, $\frac{N}{4}$ eliminates itself.

As piston speed, in feet per minute, equals $\frac{SR}{6}$, the stroke S receives consideration incidentally when this formula is written:

$$(2) \quad \text{Horsepower} = \frac{N}{4} \times \frac{3.1416 \ D^2P \times V}{4 \times 33{,}000}$$

in which V is piston speed in feet per minute.

Using metric units, a formula corresponding to (1) is written:

$$(3) \quad \text{Horsepower} = \frac{N}{4} \times \frac{3.1416 \ D^2P \times SR}{900{,}000}$$

in which N is number of cylinders, D bore diameter in cm. (centimeters), P the mean effective pressure in kg (kilograms) per square cm of piston area, S the stroke in cm, and R the number of engine revolutions per minute.

With the metric notations, piston speed c in m (meters) per second, equals $\frac{SR}{100 \times 30}$ and formula (3) can therefore also be written:

$$(4) \quad \text{Horsepower} = \frac{N}{4} \times \frac{3.1416 \ D^2P \times c}{300}$$

(*Continued on following page*)

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Nine Horsepower Formulas—Continued

These formulas are mainly useful for comparing the values for P obtained with different sizes and designs of engines and at different speeds for any given engine, the horsepower being first decided by test. In using them for determining horsepower from dimensions and design features, the difficulty is encountered that P has a fluctuating value. It includes the percentage of mechanical efficiency of the engine as a factor and is affected by compression ratio, valve sizes and lifts, valve timing, the weight of reciprocating parts and the nature of the ignition. For any given engine, P decreases after a certain speed has been reached, while the horsepower continues to be increased until the increase of speed is balanced by the reduction of P.

For classification purposes (legislation, taxation, racing rules) and rough estimates, simplified nominal horsepower formulas are used. Those relating to automobile engines of the four-cycle internal-combustion type, operated with gasoline as fuel, are of widest general interest. They are not, as a rule, directly applicable to airplane engines, Diesel or semi-Diesel engines, steam engines or to two-cycle automobile or boat engines.

Nominal and Official Horsepower Formulas for Four-Cycle Automobile and Motor Boat Engines

The most authoritative formula for the United States is that which was adopted by the Association of Licensed Automobile Manufacturers (A. L. A. M.) in the early years of the automobile industry. After the A. L. A. M. ceased to exist, the same formula was approved by the National Automobile Chamber of Commerce (N. A. C. C.). It reads:

$$(5) \quad \text{Horsepower} = \frac{D^2N}{2.5}$$

in which D is the bore diameter in inches and N the number of cylinders.

The derivation is given as follows:

The gross horsepower of a single-cylinder, four-cycle engine is equal to one-quarter times the mean effective pressure P, acting throughout the working stroke, times the area of the piston A, in square inches, times the piston speed S divided by 33,000, thus,

$$\text{Gross horsepower} = \tfrac{1}{4}\,\frac{P\,A\,S}{33{,}000}$$

Multiplying this by the number of cylinders N gives the gross horsepower for an engine of the given number of cylinders, and further multiplying by the mechanical efficiency of the engine E gives the brake horsepower. Therefore the complete equation for brake horsepower reads:

$$\text{Brake horsepower} = \frac{P\,A\,S\,N\,E}{33{,}000 \times 4}$$

The A. L. A. M. assumed that all motor car engines will deliver or should deliver their rated power at a piston speed of 1,000 feet per minute that the mean effective pressure in such engine cylinders will average 90 pounds per square inch, and that the mechanical efficiency will average 75 per cent.

Substituting these values in the above B. HP. equation, and substituting for A its equivalent, $.7854\,D^2$, the equation reads:

$$\text{Brake horsepower} = \frac{90 \times 0.7854\,D^2 \times 1{,}000 \times N \times 0.75}{33{,}000 \times 4}$$

and combining the numerical values it reduces to:

$$\text{Brake horsepower} = \frac{D^2N}{2.489}$$

or, in round numbers, with a denominator 2.5.

Another formula of American origin is one proposed by E. P. Roberts. It gives:

$$(6) \quad \text{Horsepower} = \frac{D^2LRN}{18{,}000}$$

in which D and L are bore and stroke in inches, R the number of crankshaft revolutions per minute and N the number of cylinders.

With the same connotation for D and L the Royal Automobile Club of Great Britain and the British Institution of Automobile Engineers have used the formula:

$$(7) \quad \text{Horsepower} = 0.45\,(D + L)\,(D - 1.18), \text{ for each cylinder.}$$

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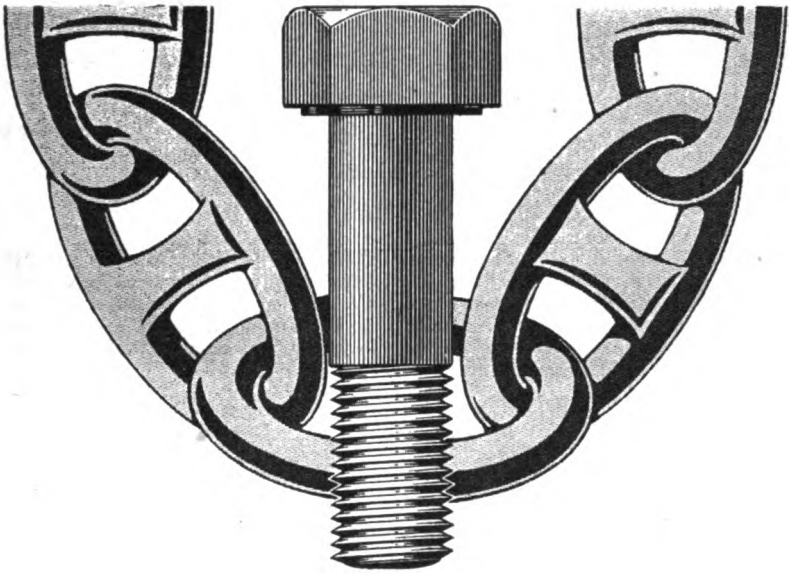

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Nine Horsepower Formulas—Continued

The official German formula by which taxation was regulated until war began in 1914 read

$$(8) \quad \text{Horsepower} = 0.3 \times id^2s$$

in which i is the number of cylinders, d the bore diameter in cm (centimeters) and s the stroke in m (meters).

The official French formula adopted in 1912 and 1913 has:

$$(9) \quad \text{Horsepower} = Kn\,D^2L \times omega$$

in which K is 0.00020 for single-cylinder engines, 0.00015 for 4-cylinder engines and 0.00013 for engines with more than 4 cylinders. D and L are bore in cm. (centimeters) and stroke in mm (millimeters), n is the number of cylinders, and $omega$ is the practicable maximum number of crankshaft revolutions per second on the road, the determination being subject to the best judgment of the supervising authorities, with consideration of gear ratio and other features of the vehicle in which the engine is used.

For comparison, a modern automobile engine may be rated by each of the formulas (5), (6), (7), (8) and (9) and the difference in results noted. Let the engine have the following characteristics: 4 cylinders, bore 3 inches, stroke 5 inches, mean effective pressure for three-fourths of the working stroke 130 lb., piston speed 2000 feet per minute (2400 r.p.m.), and mechanical efficiency, 75 per cent.

By formula (5) the N. A. C. C., the rating is

$$HP = \frac{36}{2.5} = 14\frac{2}{5}$$

By formula (6), the E. P. Roberts, it is

$$HP = \frac{9 \times 5 \times 2400 \times 4}{18{,}000} = 24$$

By formula (7), British I. A. E., it is

$$HP = 0.45\,(3+5) \times (3-1.18) = 3.60 \times 1.82 = 6.552$$

Multiplying by 4, the number of cylinders, gives 26.108.

By formula (8), German official, it is

$$HP = 0.3 \times 4 \times 57.76 \times 0.127 = 8.80$$

By formula (9), French official rating, it is

$$HP = 0.00015 \times 4 \times 57.76 \times 12.7 \times 30 = 13.20$$

on the basis of 1800 r.p.m., with the possibility that the rating may be ⅓ higher, or 17.60, namely if the maximum engine speed of 2400 r.p.m. is taken as the basis.

Two-Cycle Automobile and Motor Boat Engines

The two-cycle engine has twice as many working strokes as the four-cycle engine, but its horsepower is often figured from a four-cycle formula by multiplying the result by 1.65, instead of by 2, to allow for the usually lessened efficiency (especially the volumetric efficiency or ability to receive a full charge of fuel mixture) of this type at the higher speeds.

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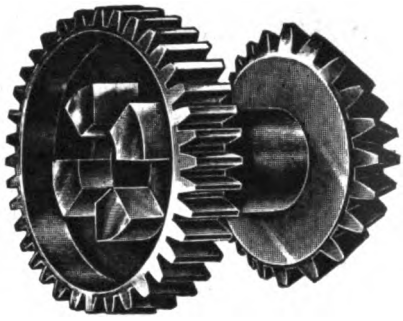

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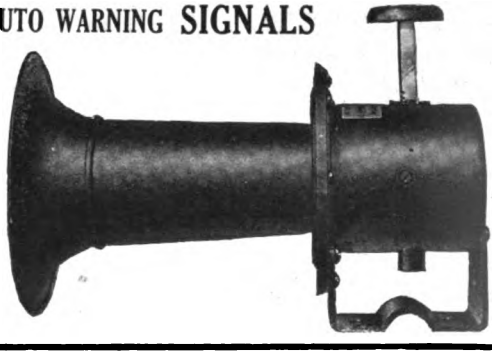

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HORSEPOWER TABLE BY N.A.C.C. (FORMERLY A.L.A.M.)

In using table, find bore of cylinder in inches or millimeters in the proper left hand column, then read across to right under column for the number of cylinders that the motor under consideration has.

Bore = D		Number of Cylinders = N			
Inches	Millimeters	4	6	8	12
2½	64	10.00	15.00	20.00	30.00
2⅝	68	11.03	16.54	22.05	33.08
2¾	70	12.10	18.15	24.20	36.30
2⅞	73	13.23	19.84	26.45	39.68
3	76	14.40	21.60	28.80	43.20
3⅛	79	15.63	23.44	31.25	46.88
3¼	83	16.90	25.35	33.80	50.70
3⅜	85	18.23	27.34	36.45	54.68
3½	89	19.60	29.40	39.20	58.80
3⅝	92	21.03	31.54	42.05	63.08
3¾	95	22.50	33.75	45.00	67.50
3⅞	99	24.03	36.04	48.05	72.08
4	102	25.60	38.40	51.20	76.80
4⅛	105	27.23	40.84	54.45	81.68
4¼	108	28.90	43.35	57.80	86.70
4⅜	111	30.63	45.94	61.25	91.88
4½	114	32.40	48.60	64.80	97.20
4⅝	118	34.23	51.34	68.45	102.68
4¾	121	36.10	54.15	72.20	108.30
4⅞	124	38.03	57.04	76.05	114.08
5	127	40.00	60.00	80.00	120.00
5⅛	130	42.03	63.04	84.05	126.08
5¼	133	44.10	66.15	88.20	132.30
5⅜	137	46.23	69.34	92.45	138.68
5½	140	48.40	73.60	96.80	145.20
5⅝	143	50.63	75.94	101.25	151.88
5¾	146	52.90	79.35	105.80	158.70
5⅞	149	55.23	82.84	110.45	165.68
6	152	57.60	86.40	115.20	172.80

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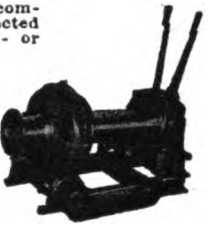

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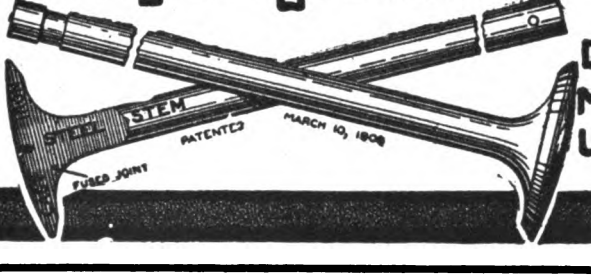

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Table of Electrical Horsepower

Volts	Amperes											
	1	10	20	30	40	50	60	70	80	90	100	110
1	.00134	.0134	.0268	.0402	.0536	.0670	.0804	.0938	.1072	.1206	.1341	.1475
5	.00670	.0670	.1341	.2011	.2681	.3351	.4022	.4692	.5362	.6032	.6703	.7373
10	.01341	.1341	.2681	.4022	.5362	.6703	.8043	.9383	1.072	1.206	1.341	1.475
15	.02011	.2011	.4022	.6032	.8043	1.005	1.206	1.408	1.609	1.810	2.011	2.212
20	.02681	.2681	.5362	.8043	1.072	1.340	1.609	1.877	2.145	2.413	2.681	2.949
25	.03351	.3351	.6703	1.005	1.341	1.676	2.011	2.346	2.681	3.016	3.351	3.686
30	.04022	.4022	.8043	1.206	1.609	2.011	2.413	2.815	3.217	3.619	4.022	4.424
35	.04692	.4692	.9384	1.408	1.877	2.346	2.815	3.284	3.753	4.223	4.692	5.161
40	.05362	.5362	1.072	1.609	2.145	2.681	3.217	3.753	4.290	4.826	5.362	5.898
45	.06032	.6032	1.206	1.810	2.413	3.016	3.619	4.223	4.826	5.439	6.032	6.635
50	.06703	.6703	1.341	2.011	2.681	3.351	4.022	4.692	5.362	6.032	6.703	7.373
75	.10054	1.005	2.011	3.016	4.021	5.027	6.032	7.037	8.043	9.048	10.05	11.06
100	.13405	1.341	2.681	4.022	5.362	6.703	8.043	9.384	10.72	12.06	13.41	14.75
500	.67025	6.703	13.41	20.11	26.81	33.51	40.22	46.92	53.62	60.32	67.03	73.73
1,000	1.3405	13.41	26.81	40.22	53.62	67.03	80.43	93.84	107.2	120.6	134.1	147.5
5,000	6.7025	67.03	134.1	201.1	268.1	335.1	402.2	469.2	536.2	603.2	670.3	737.3
10,000	13.405	134.1	268.1	402.2	536.2	670.3	804.3	938.3	1072.	1206.	1341.	1475.

Rule: $\frac{\text{Number of volts multiplied by number of amperes}}{746}$ = number of horsepowers; usually written : $\frac{VA}{746} = hp.$

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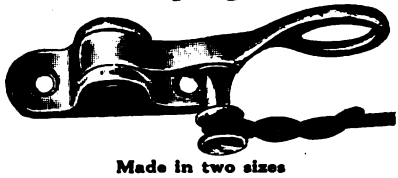

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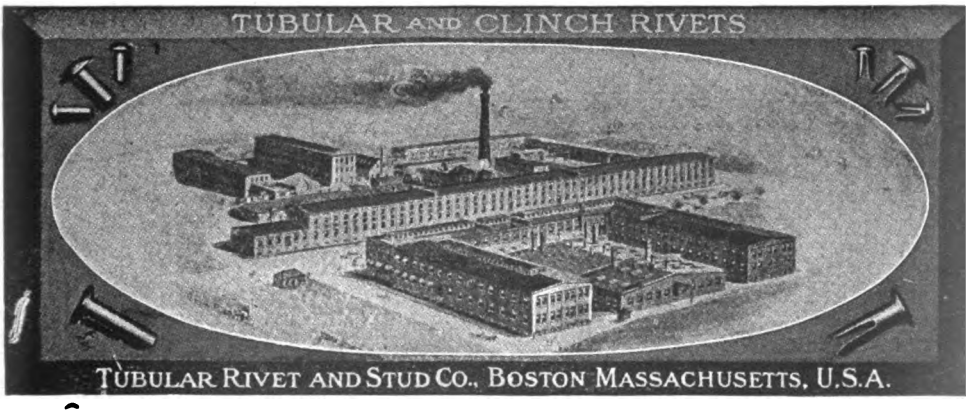

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Condensed Table of Piston Displacements

For Bores and Strokes progressing by 1/16 in.

D = bore; S = stroke; A = area in sq. in. of cross-section = $D^2 \times 0.7854$; N = number of cylinders Piston displacement = ASN cub. in. = 16.387 ASN cubic centimeters.

Bore and Stroke		A = area of Section	Bore and Stroke		A = area of Section	Bore and Stroke		A = area of Section
By 1/16 In.	Decimal		By 1/16 In.	Decimal		By 1/16 In.	Decimal	
2 1/4	2.2500	3.9761	3 9/16	3.5625	9.9678	4 7/8	4.8750	18.665
2 5/16	2.3125	4.2000	3 5/8	3.6250	10.3210	4 15/16	4.9375	19.147
2 3/8	2.3750	4.4301	3 11/16	3.6875	10.6800	5	5.0000	19.635
2 7/16	2.4375	4.6664	3 3/4	3.7500	11.045	5 1/16	5.0625	20.129
2 1/2	2.5000	4.9097	3 13/16	3.8125	11.416	5 1/8	5.1250	20.629
2 9/16	2.5625	5.1572	3 7/8	3.8750	11.793	5 3/16	5.1875	21.135
2 5/8	2.6250	5.4129	3 15/16	3.9375	12.177	5 1/4	5.2500	21.648
2 11/16	2.6875	5.6727	4	4.0000	12.566	5 5/16	5.3125	22.166
2 3/4	2.7500	5.9396	4 1/16	4.0625	12.962	5 3/8	5.3750	22.691
2 13/16	2.8125	6.2126	4 1/8	4.1250	13.364	5 7/16	5.4375	23.221
2 7/8	2.8750	6.4918	4 3/16	4.1875	13.772	5 1/2	5.5000	23.758
2 15/16	2.9375	6.7771	4 1/4	4.2500	14.186	5 9/16	5.5625	24.301
3	3.0000	7.0686	4 5/16	4.3125	14.607	5 5/8	5.6250	24.850
3 1/16	3.0625	7.3662	4 3/8	4.3750	15.033	5 11/16	5.6875	25.406
3 1/8	3.1250	7.6699	4 7/16	4.4375	15.466	5 3/4	5.7500	25.967
3 3/16	3.1875	7.9798	4 1/2	4.5000	15.904	5 13/16	5.8125	26.535
3 1/4	3.2500	8.2958	4 9/16	4.5625	16.349	5 7/8	5.8750	27.109
3 5/16	3.3125	8.6179	4 5/8	4.6250	16.800	5 15/16	5.9375	27.688
3 3/8	3.3750	8.9462	4 11/16	4.6875	17.257	6	6.0000	28.274
3 7/16	3.4375	9.2806	4 3/4	4.7500	17.728	6 1/16	6.0525	28.771
3 1/2	3.5000	9.6211	4 13/16	4.8125	18.190	6 1/8	6.1250	29.465

Multiply the area figure by the stroke, using the decimal column for the stroke figure.
For example: D = 3 1/16 in., gives A = 7.3662; Stroke = S = 4 7/8 in. = 4.8750 in.

```
Multiply   7.3662
   by      4.8750
   ---------------
          00000
         368311
        515634
       589296
      294648
   ---------------
   35.91022510
```

As 4 decimals were used in each figure, the period is placed 4 + 4 = 8 places from the right, making the result 35.9102 cub. in. of piston displacement for each cylinder.

To get piston displacement for the engine, multiply this figure by N, the number of cylinders. For a 4-cyl. engine, this makes in the example

```
35.9102 cub. in.
   × 4
   ---------------
143.6408 cub. in. for the engine.
```

If it is desired to know the equivalent in cm.³ (cubic centimeters),

```
Multiply   143.6408
   by       16.387
   ---------------
         10054856
        11491264
        4309224
       8618448
      1436408
   ---------------
   2353.8417896
```

As there are 4 decimals in the first figure and 3 decimals in the second, the period comes 4 + 3 = 7 places from the right, and the total piston displacement of the engine is 2353.842 cm.³ (cubic centimeters).

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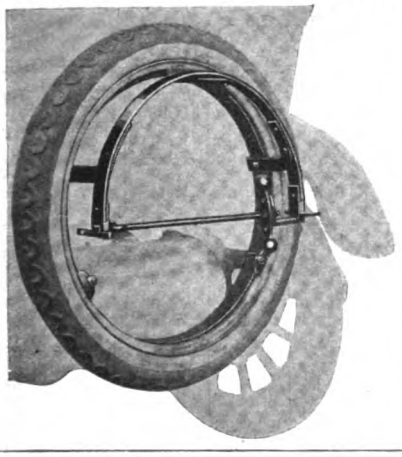

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Rate of Speed from Elapsed Time and Distance

To find the rate of speed in miles per hour (m.p.h.) from total distance covered and the elapsed time, multiply distance by 60 (minutes) and divide by number of minutes elapsed time.

Example: Distance 105.5 miles; elapsed time 1 h. 53 m. 30 s. or 113 m. 30 s.:

$$60 \text{ times } 105.5 = 6330 \text{ and } \frac{6330}{113.5} = \frac{63{,}300}{1135} = 55.8 \text{ m.p.h.}$$

Seconds are turned into a decimal fraction of a minute (for convenience in dividing) by dividing their number by 6 and writing the quotient as a decimal, one decimal being ordinarily sufficiently accurate for figuring m.p.h.

For complete accuracy in figuring m.p.h. from distance and elapsed time, multiply distance by 3600 and divide the product by the elapsed time in seconds.

Speed Rules for Measured One Mile or One Kilometer

The preceding general rule for figuring m.p.h. from the distance and the time, in minutes or seconds, is further simplified when the distance in question is the unit—1 mile or 1 kilometer. In either case, divide 3600 by the number of seconds elapsed, to find the rate of speed in m.p.h. or km.p.h., respectively.

General rule: When m $\left\{\begin{matrix}\text{miles}\\ \text{kilometers}\end{matrix}\right\}$ are covered in s seconds, the speed in $\left\{\begin{matrix}\text{m.p.h.}\\ \text{km.p.h.}\end{matrix}\right\}$ is

$$\frac{3600}{s} \times m$$

The following two tables give the speed in m.p.h. (or km.p.h.) for measured mile (or kilometer) made in from 24 seconds to 3 minutes.

Speed in Miles or Kilometers per Hour Corresponding to Any Elapsed Time from 24 Seconds to 59⅘ Seconds for 1 Measured Mile or Kilometer, Progressing by ⅕ Second.

Time for One Mile or One Kilometer, Seconds	Equal to Miles or Kilometers per Hour	Time for One Mile or One Kilometer, Seconds	Equal to Miles or Kilometers per Hour	Time for One Mile or One Kilometer, Seconds	Equal to Miles or Kilometers per Hour	Time for One Mile or One Kilometer, Seconds	Equal to Miles or Kilometers per Hour	Time for One Mile or One Kilometer, Seconds	Equal to Miles or Kilometers per Hour	Time for One Mile or One Kilometer, Seconds	Equal to Miles or Kilometers per Hour
24	150.00	30	120.00	36	100.00	42	85.71	48	75.00	54	66.66
⅕	148.76	⅕	119.20	⅕	99.44	⅕	85.30	⅕	74.68	⅕	66.42
⅖	147.54	⅖	118.42	⅖	98.90	⅖	84.90	⅖	74.38	⅖	66.17
⅗	146.34	⅗	117.64	⅗	98.36	⅗	84.50	⅗	74 07	⅗	65.93
⅘	145.16	⅘	116.88	⅘	97.82	⅘	84.11	⅘	73.77	⅘	65.69
25	144.00	31	116.13	37	97.29	43	83.72	49	73.47	55	65.45
⅕	142.86	⅕	115.38	⅕	96.77	⅕	83.33	⅕	73.17	⅕	65.21
⅖	141.73	⅖	114.65	⅖	96.25	⅖	82.95	⅖	72.87	⅖	64.98
⅗	140.62	⅗	113.90	⅗	95 74	⅗	82.57	⅗	72.58	⅗	64.74
⅘	139 53	⅘	113.21	⅘	95 23	⅘	82.19	⅘	72.29	⅘	64.51
26	138.46	32	112.50	38	94.73	44	81.81	50	72.00	56	64.28
⅕	137.40	⅕	111.80	⅕	94.24	⅕	81.44	⅕	71.71	⅕	64.05
⅖	136.36	⅖	111 11	⅖	93.75	⅖	81.08	⅖	71.42	⅖	63.83
⅗	135.34	⅗	110.43	⅗	93.26	⅗	80.71	⅗	71.14	⅗	63.60
⅘	134.33	⅘	109.75	⅘	92.78	⅘	80.35	⅘	70.86	⅘	63.38
27	133.33	33	109 09	39	92.30	45	80.00	51	70.58	57	63.16
⅕	132.25	⅕	108.43	⅕	91.83	⅕	79.64	⅕	70.31	⅕	62.93
⅖	131.38	⅖	107.78	⅖	91.37	⅖	79.29	⅖	70.04	⅖	62.71
⅗	130.43	⅗	107.14	⅗	90.91	⅗	78.94	⅗	69.76	⅗	62.50
⅘	129.50	⅘	106151	⅘	90.45	⅘	78.60	⅘	69.49	⅘	62.28
28	128.57	34	105.88	40	90.00	46	78.26	52	69.23	58	62.07
⅕	127.66	⅕	105.26	⅕	89.55	⅕	77.92	⅕	68.96	⅕	61.85
⅖	126.76	⅖	104.65	⅖	89.11	⅖	77.58	⅖	68.70	⅖	61.64
⅗	125.87	⅗	104.04	⅗	88.67	⅗	77.25	⅗	68.44	⅗	61.43
⅘	125.00	⅘	103.45	⅘	88.23	⅘	76.92	⅘	68.18	⅘	61.22
29	124.13	35	102.85	41	87.80	47	76.59	53	67.92	59	61.01
⅕	123.28	⅕	102.27	⅕	87.38	⅕	76.27	⅕	67.66	⅕	60.81
⅖	122.45	⅖	101.69	⅖	86.95	⅖	75.95	⅖	67.41	⅖	60.60
⅗	121.62	⅗	101.12	⅗	86.53	⅗	75.63	⅗	67.16	⅗	60.40
⅘	120.80	⅘	100.56	⅘	86.12	⅘	75.31	⅘	66.91	⅘	60.20

To convert miles into kilometers, multiply the miles by 1.6093.
To convert kilometers into miles, multiply the kilometers by 0.6214.

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Speaking of Equipment

Every one of your customers who owns a wrench kit will want a WIZARD on sight because it does just that—replaces a whole set of open end wrenches.

Ten Standard Sizes Instantly Available All in One Wrench

Instantly Adjustable to Any One of Ten Sizes

Just lift the jaw, slide to desired size and drop into mesh.

Ten Openings: 1/4", 5/16", 3/8", 7/16", 1/2", 9/16", 19/32", 11/16", 25/32", 7/8".

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5 S. A. E. Standard Sizes.
6 U. S. Standard Set Screw Sizes.
4 Cap Screw Sizes.

Every Opening Absolutely Positive.

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Wrench Manufacturers for Over Thirty Years
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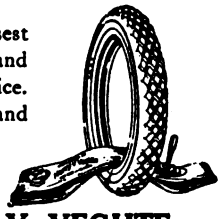
Chosen with closest regard to long and satisfactory service. Money Savers and Good-Will Makers.



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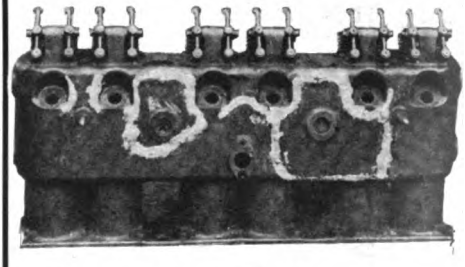

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Cracked water jackets, scored cylinders, broken motor parts of iron or aluminum, radiators, manifolds, bodies, etc., can be made as serviceable as ever and missing parts may be built up with **Silverine Hard, Silverine Aluminum** or **Silverine Soft.** No special experience or tools required. Easy profits for every repair shop and garage. Send for our special Circular, showing work saved from the junk pile with Silverine Solders.

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Speed in Miles or Kilometers per Hour for an Elapsed Time of from 1 to 3 Minutes Over a Measured Mile or Kilometer

Time Over Measured Mile or Kilometer		Rate of Speed in Miles or Kilometers per Hour	Time Over Measured Mile or Kilometer		Rate of Speed in Miles or Kilometers per Hour	Time Over Measured Mile or Kilometer		Rate of Speed in Miles or Kilometers per Hour
Min.	Sec.		Min.	Sec.		Min.	Sec.	
1	0	60.00	1	27	41.38	1	54	31.58
1	1	59.00	1	28	40.91	1	55	31.30
1	2	58.06	1	29	40.45	1	56	31.03
1	3	57.14	1	30	40.00	1	57	30.77
1	4	56.25	1	31	39.56	1	58	30.50
1	5	55.38	1	32	39.13	1	59	30.25
1	6	54.54	1	33	38.71	2	0	30.00
1	7	53.73	1	34	38.29	2	3	29.26
1	8	52.94	1	35	37.89	2	6	28.57
1	9	52.17	1	36	37.50	2	9	27.90
1	10	51.42	1	37	37.11	2	12	27.27
1	11	50.70	1	38	36.73	2	15	26.66
1	12	50.00	1	39	36.36	2	18	26.08
1	13	49.31	1	40	36.00	2	21	25.53
1	14	48.65	1	41	35.64	2	24	25.00
1	15	48.00	1	42	35.29	2	27	24.49
1	16	47.37	1	43	34.95	2	30	24.00
1	17	46.75	1	44	34.61	2	33	23.53
1	18	46.15	1	45	34.28	2	36	23.07
1	19	45.57	1	46	33.96	2	39	22.64
1	20	45.00	1	47	33.64	2	42	22.22
1	21	44.44	1	48	33.33	2	45	21.81
1	22	43.90	1	49	33.03	2	48	21.42
1	23	43.37	1	50	32.72	2	51	21.05
1	24	42.85	1	51	32.43	2	54	20.69
1	25	42.35	1	52	32.14	3	0	20.00
1	26	41.86	1	53	31.86	..	..	.....

Speed Equivalents for 1 Mile and 1 Kilometer

1 mile per hour = 88 ft. per minute.
= 1.46 ft. per second.
= 27.8 metres per minute.
= 0.463 metre per second.
1 km. per hour = 0.6214 miles per hour.
= 54.9 ft. per minute.
= 0.288 metre per second.

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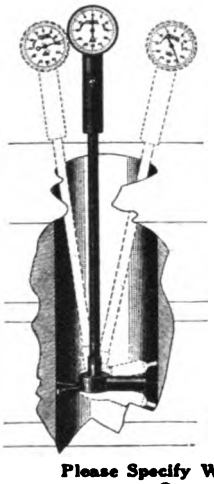
Federal Cylinder Gauge With Dial Out in the Open



Detects Tapered, Scored or Out-of-Round Cylinders

The Federal Cylinder Test Gauge fills the long-felt want for an instrument that will indicate with absolute accuracy and with the greatest possible convenience the size and concentricity of any engine cylinder throughout its entire length.

It is made in two models—Model A, a built-up gauge for testing a variety of diameters, and Model B, with centralizing device for measuring cylinders of a standard size.

Where it is necessary to set the gauge accurately to a standard diameter a "Master" can be furnished when specified.

Write for Cylinder Gauge Bulletin No. A3

Please Specify When Requesting Quotations:

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2. Do you wish Model A or B?
3. Do you need Master Gauges? What diameter? How many?

Federal Products Corporation

303 Harris Ave. Providence, R. I.

Fits over any rear tire
Carries as many extra tires as desired

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Sept. 18, 1917. Jan. 27, 1920. Aug. 10, 1920

2-R-3 Adjustable Tire Carriers

The second extra tire is supported by the first, the third by the second, etc. Strap all together on both sides. Write for further particulars; our full line will interest you.

The International Stamping Co.

400 N. Leavitt Street Chicago, Ill., U. S. A.

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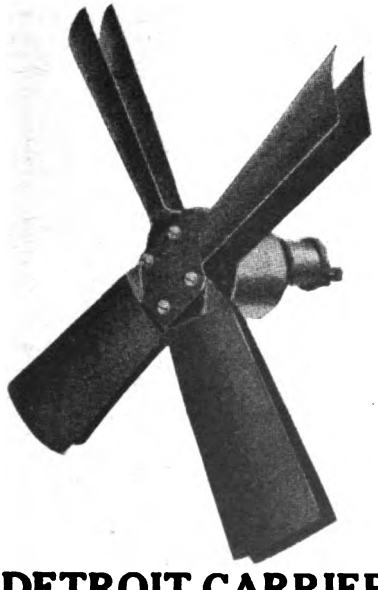

Light in Weight
Yet
Very Rigid

Moves Air
Through Radiator
With Great Velocity

DETROIT CARRIER & MANUFACTURING CO.
DETROIT

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Relations between the Speed of a Car and the Number of Revolutions per Minute of the Road Wheels

To find the number of r.p.m. of road wheels, divide the speed in m.p.h. by diameter of wheel in inches and multiply by 336.134.

To find m.p.h. of car, multiply r.p.m. of road wheel by wheel diameter in inches and divide by 336.134.

These rules are derived as follows: 1 m.p.h. equals 88 ft. per minute, or 12×88 inches ($= 1056$ inches) per minute. The circumference of the road wheel, if its diameter in inches is D, is $D\pi$ and $\pi = 3.1416$. Therefore:

$$\text{Number of r.p.m.} = \frac{\text{Number of m.p.h.}}{D} \times \frac{1056}{3.1416} = \frac{\text{Number of m.p.h.}}{D} \times 336.134$$

The accompanying table gives the equivalents of m.p.h. in feet per minute, and applies the rules, as given above, to road wheels from 24 to 44 inches and for speeds up to 40 m.p.h.

Miles per Hour	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	22	24	26	28	30	35	40
Feet per Minute	88	176	264	352	440	528	616	704	792	880	968	1,056	1,144	1,232	1,320	1,418	1,496	1,584	1,672	1,760	1,936	2,112	2,288	2,464	2,640	3,080	3,520
Wheel Diameters in Inches: 24	14	28	42	56	70	84	98	112	126	140	154	168	182	196	210	224	238	252	266	280	308	336	364	392	420	490	560
26	12.92	21.84	38.76	51.69	63.61	77.53	90.46	103.38	116.30	129.23	142.15	155.07	168	180.92	193.84	206.76	219.69	232.61	245.53	258.46	284.30	310.15	336	361.84	397.69	452.30	516.92
28	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228	240	264	288	312	336	360	420	480
30	11.2	22.4	33.6	44.8	56	67.2	78.4	89.6	100.8	112	123.2	134.4	145.6	156.8	168	179.2	190.4	201.6	212.8	224	246.4	268.8	291.2	312.6	336	392	448
32	10 5	21	31.5	42	52.5	63	73.5	84	94.5	105	115.5	126	136.5	147	157.5	168	178.5	189	199.5	210	231	252	273	294	315	367.5	420
34	9.88	19.70	29.64	39.52	49.41	59.29	69.17	79.05	88.94	98.82	108.70	118.58	128.47	138.35	148.23	158.11	168	177.88	187.76	197.64	217.41	237	256.94	276.70	296.47	345.88	395.29
36	9.33	18.66	28	37.33	46.66	56	65.33	74.66	84	93.33	102.66	112	121.33	130.66	140	149.33	158.66	168	177.33	186.66	205.33	224	242.66	261.33	280	326.66	373.33
38	8 8	17.68	26.52	35.36	44.21	53.05	61.89	70.73	79.57	88.42	97.27	106.10	114.94	123.78	132.63	141.47	150.31	159.15	168	176.84	194.52	212.21	238.89	247.57	265.26	309.21	353.42
40	8.4	16.8	25.2	33.6	42	50.4	58.8	67.2	75.6	84	2.4	100.8	109.2	117.6	126	134.4	142.8	151.2	159.6	168	184.8	201.6	218.4	235.2	252	294	336
42	8	16	24	32	40	48	56	64	72	80	88	96	104	112	120	128	136	144	152	160	176	192	208	224	240	280	320
44	7.63	15.27	22.10	30.54	38.18	45.81	53.45	61.09	68.72	76.36	84	91.63	99.24	106.10	114.54	123.18	129.31	137.45	145.09	156.72	168	183.27	198.54	213.81	229.09	267.27	305.45

Wheel diameters include tires. It is commonly believed that with soft-inflated air tires r.p.m. is increased and m.p.h. is reduced, perhaps up to 3 per cent on rough roads. With worn-down solid tires the actual diameter should be measured.

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KWIK-AK-SHUN

—for 100% Bearings in 75% less time

Garages, repair shops and automobile plants now have unskilled mechanics turning out 100% bearings in one-quarter of the time it used to take experts to "scrape in" the 45% to 50% bearings.

Kwik-Ak-Shun enables them to successfully apply the lapping process to babbitt, brass, bronze, etc. Positively will not cut steel or iron. Does its work; "breaks down" and is then inoperative—no emery, glass or carborundum to stick and injure any part of the machinery.

Single cans (3 ounces net weight).....$1.50
6-can cartons (18 ounces net weight)..... 9.00
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For Sale by all Recognized Jobbers, or write to

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Sole Manufacturers
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Pull-Out Line

The "U. W." Hold Fast Tire lock is made from high grade steel cable 40 inches long and covered with genuine leather to prevent chafing of tires.

Tiresome delays are prevented by carrying this powerful steel towing cable. Has breaking strain of five ton.

THE UPSON-WALTON CO.
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Van Sicklen Speedmeters

No. 105 Type.

Ford owners of today want a speedmeter that will serve to improve the appearance of their car and at the same time eliminate the annoyance and aggravation experienced with common types in use.

The Van Sicklen cowl board combinations offer a wide selection with a polished, walnut finished board. The instrument, which is built in the Elgin National Watch Factory, is the same as standard equipment furnished for America's leading cars.

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Car Speed at 1000 R.P.M.

What is speed in m.p.h. at 1000 r.p.m. of engine with road wheels of different sizes? Assumed: the use of direct gear and a ⅗ bevel-gear ratio; also a speed reduction of 3 per cent due to tire compression and slip.

Answer: If d is wheel diameter in inches (reduced to feet by dividing by 12), one has (since 88 ft. per minute equals 1 m.p.h.):

$$\text{Number of m.p.h.} = \frac{d\pi \times 1000}{3 \times 12 \times 88} = \frac{d \times 3141.6}{3168} = d - 1\% \text{ (approx.)}$$

The m.p.h. thus equal the wheel diameter in inches minus 4 per cent, with the 3 per cent allowance for tire action, and a ⅗ gear ratio.

Similarly, for a ⅓ ratio (old type racing car) the m.p.h. equals $3\,d - 4$ per cent.

From this, the m.p.h. obtained with any other ratio of total reduction is easily found by reducing $3\,d$ correspondingly and deducting 4 per cent. A 1⅗ ratio (representing low gear, for example) gives $\frac{5}{12}\,d - 4$ per cent.

For other engine speeds than 1000 r.p.m., increase or reduce in proportion.

The following table shows the approximate speed in m.p.h. for different wheel diameters and gear ratios, at 1000 r.p.m. of engine.

Gears	12:1	9:1	7:1	5:1	4:1	3½:1	3:1	2½:1	2:1	1:1
30-in. wheel.....	7.2	9.6	12.3	17.3	21.6	24.7	28.8	34.6	43.2	86.4
32-in. wheel.....	7.7	10.2	13.2	18.4	23.1	26.4	30.7	36.8	46.1	92.2
33-in. wheel.....	7.9	10.6	13.6	19.0	23.8	27.2	31.7	38.0	47.5	95.0
34-in. wheel.....	8.2	10.9	13.9	19.6	24.5	27.9	32.6	39.2	49	97.9
36-in. wheel.....	8.6	11.5	14.8	20.7	25.9	29.6	34.6	41.4	51.9	103.7
38-in. wheel.....	9.1	12.2	15.6	21.9	27.4	31.2	36.5	43.8	54.7	109.4
40-in. wheel.....	9.6	12.8	16.5	23.0	28.8	32.9	38.4	46.0	57.6	115.2
42-in. wheel.....	10.1	13.4	17.3	24.2	30.3	34.6	40.3	48.4	60.5	121.0
44-in. wheel.....	10.6	14.1	18.1	25.3	31.7	36.2	42.2	50.6	63.4	126.7

Speedometer and Odometer Readings.

Odometers serve mainly the following purposes:

1—To ascertain the mileage of tires.
2—To keep track of monthly and yearly service of a vehicle.
3—To furnish a control upon the daily work of drivers.
4—To check illegitimate use of a vehicle.
5—To ascertain mileage of a day's journey or a tour.

If driven from a front wheel the odometer will record the slippage as well as the mileage of the front wheel.

If driven from a rear wheel, it will record slippage (spinning) as well as mileage of that wheel.

If driven from a transmission shaft, it will record slipping (spinning) of both rear wheels.

It seems to be the consensus of opinion that these sources of error are negligible so far as any of the purposes above mentioned are concerned.

Error due to insufficient inflation of air tires is also negligible, as either the soft tire maintains contact with the ground along the entire circumference of its tread—the circumference being merely ovalized—or else, in the case of a flat tire whose tread buckles under the driving effort, very little distance is covered under the abnormal condition.

Errors due to roughness of road are found to compensate for themselves, the bounding and the indentations of the tread resulting as often in advancement as in retardation.

The only notable error arises in connection with commercial motor vehicles when the wheel diameter is reduced by the wearing down of solid rubber tires.

Reliable data on speedometer and odometer readings have not yet been systematically gathered.

Index to Tables and Data Appears on Pages 1087 and 1088

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VARNISH DRYROOMS

WE GUARANTEE

—*FOR*—
AUTOMOBILE
BODIES
CHASSIS
WHEELS

A Better Quality Finish
Quicker Results
Saving in Floor Space and Working Capital

—*FOR*—
MOTOR
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TRACTORS

DRYING SYSTEMS, Inc.

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Truck Tractor

Electric Lights Without Battery

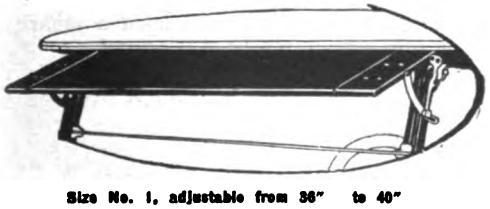
The Nicolite No-Battery System can be used on any make of Truck or Farm Tractor. Any good mechanic can make installation in from four to six hours.

The truck or tractor owner of today demands equipment that will give him twenty-four hour-a-day service when he needs it. The Nicolite No-Battery System is the answer. Heavy duty vehicles shake batteries to pieces. This System gives powerful light without that expense and trouble. Can be used with a battery if needed. Nothing else like it. Fully guaranteed. Lowest initial cost and no up-keep expense. Price is right—investigate.

Made Especially for Heavy Duty Use

The Nicolite System is not just an ordinary motor car system adapted, but is built especially for this heavy duty use. Will stand the abuse the average truck or tractor receives. We can supply installation for practically any job. The work can be done by any good mechanic. Complete information on request.

Nelson J. Quinn Company
Toledo, Ohio



Size No. 1, adjustable from 36" to 40"
Size No. 2, adjustable from 39½" to 43½"
Size No. 3, adjustable from 43½" to 48"

No. 2 fits ninety per cent of all cars. This being the case, dealers are required to favor only No. 2. No. 1 for narrow windshields, No. 3 for extra wide windshields. When ordering, specify open or enclosed car.

National Windshield Visor

Price, All Sizes, $12.50

National Visors are adjustable to meet the driver's line of vision. It protects windshield from sun-glare, head-light glare, rain, mist, or snow.

Made of special pressed steel, baked black enamel on top, satin green underneath, with two-inch adjustment at each end to allow for the various widths of windshields. Attachments are black enameled and held in place by upper wing nuts on each side of windshield post. An auxiliary clamp fastens these to windshield post at lower end. The quadrants by which the Visor is raised or lowered are brass, heavily nickel plated.

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Air and Wind Pressure

On this subject reliable data are yet to be formulated and established.

When an object is moved in the atmosphere or a current of air strikes an object, a pressure is produced, but the natural laws governing the force and nature of the pressure are as yet understood only in part.

According to previously accepted ideas, which were applied in practice mainly to figure maximum wind pressure upon buildings and bridges, the pressure in pounds, P, against a squarely apposed plane area, S square feet, at a wind velocity of V miles per hour, was expressed in the formula: $P = 0.0025\ SV^2$, various investigators having gradually reduced the numerical factor from 0.005, which was first supposed to be correct, to one-half of this value.

In applying this formula to irregular shapes or to plane surfaces held at an angle smaller than 90 deg. to the direction of movement and air resistance, it has been customary to assume that the effective area S is the horizontal projection of the actual area. For example. it has been supposed that a windshield held at an angle of 60 deg. is equivalent, so far as air resistance is concerned, to one standing vertically and reaching to the same height. Its area would be 0.87 of that of the sloping shield, but the reduction of air resistance is much more than 13 per cent.

The principal flaw, both in the basic formula and in the projected-area theory lies in disregarding body shapes and dimensions and assuming that frontal area alone determines air and wind resistance. If the question is one of wind resistance in a motor car, the direction of the wind is an additional factor that baffles calculation and renders any application of previously accepted theories useless.

More modern views originate from experiments with streamline shapes to determine the best shapes for boats. A square or oblong piece of soap that is dragged through water by a string passing through the soap assumes gradually by the wear due to resistance of the water the shape now characterized as "streamline," which is an oval, more elongated and more pointed at the rear the faster the dragging movement has been. This agreed with the requirement of considerable length for fast boats. In airplane experiments it was similarly found that the adoption of streamline sections for construction parts reduced air resistance and the formation of eddies. Air being much lighter and more elastic than water, and having a mobility of a different character, the streamline shapes for aircraft were not in all respects identical with those for boats, but the main principle found to be fully established in both cases was the same, to the effect that the resistance encountered by moving an object against water or air cannot be determined from the areas opposed to the movement and the speed, but undergoes radical changes if the shapes or dimensions of the object are altered without altering the frontal area. And it has been further established that different speeds call for different shapes if the minimum of resistance for a given frontal area shall be realized.

The Eiffel aerodynamical laboratory of Paris, France, gives the following co-efficients for wind pressures against objects of various shapes:

Against flat circular plate	0.0028
flat square plate	0.0030
sphere	0.000445
round side of hollow hemisphere	0.0081
hollow side of hollow hemisphere	0.00384
apex (60 degrees) of cone	0.0013
apex (30 degrees) of cone	0.00085
apex (20 degrees) of cone with hemispherical bottom	0.000406
hemispherical bottom of same	0.000222

The pressure upon a rectangular plate is greater than the pressure upon a square or round plate of same area, probably largely because its circumference is greater.

The power required for overcoming wind pressure is: Power = VP, where V is the velocity and P the pressure or resistance. Inserting the value for P, with K denoting the co-efficient, one has

$$\text{Power} = KSV^3$$

This means that the resistance or pressure must be overcome at the rate at which it is created, and the formula could be quite correct if it were certain that the formula for pressure or resistance ($P = KSV^2$) were reliable. V^2 is in reality found to be too high for low velocities and too low for high velocities. Many find it difficult to perceive that the power should be according to the cube of the velocity. It helps the understanding, however, to note that the pressure of KSV^2 cannot be reached before the power has reached the value of KSV^3 in producing it.

(*Continued on page* 1110)

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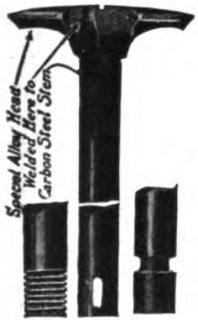

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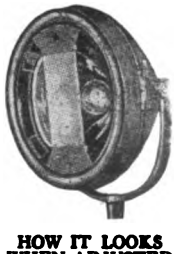

HOW IT LOOKS WHEN ADJUSTED

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According to measurements by the United States Signal Service at Mount Washington, N. H., the wind pressure against a vertical plane with nothing behind it is as follows, in pounds per square foot:

Miles Per Hour	Pressure	Miles Per Hour	Pressure
10	0.4	50	10.0
20	1.6	60	14.4
30	3.6	80	25.6
40	6.4	100	40.0

and upon a cylindrical surface the pressure is one-half of these figures for the same frontal area, but this is subject to variation according to whether there is a cylindrical, a flat or a hollow surface at the back of the cylindrical surface turned against the wind.

Features in which automobile design is affected by the greater or lesser knowledge at disposal with reference to pressures and movements of the atmosphere are as follows:

Shapes of vehicles (front, rear, top, bottom and wheels) producing a minimum of air resistance for fast driving or driving against a high wind.

The position and area of windshields and headlights.

The air channels in radiators.

The regulation of air passage under the hood, especially at the carbureter intakes.

Design and timing of intake and exhaust valves.

The ventilating fan and its position.

The carbureter and manifold channels.

The exhaust pipe and the muffler, where sounds as well as resistances are affected.

Provisions for reducing the dust nuisance through vehicle design causing least atmospheric disturbance and eddies along the road surface.

Provisions for making road grit and dust strike the vehicle body and its occupants in as small a measure as possible.

The design of dynamometers intended to measure power by air resistance against the movement of rotated blades.

At all these points the designer's understanding of the air pressures and movements involved is following far behind actual construction based on experience, or is deliberately subordinated, as being unsafe, to conventional design.

Hill Climbing Formulas

Contests for ascertaining the different capacities of different cars for ascending long and steep hills at a maximum of speed are no longer of interest as a means for determining what power, weight and gear proportions should be incorporated in a motor vehicle or for spreading information among the public with regard to car requirements or car merits. By reason of the increased power and reliability of modern engines, the result of an ordinary hill-climbing contest is now dominated by the proportion between power and weight. Long and steep hills can be ascended by almost any motor vehicle at a rate of speed which is higher than desirable, considering the wear and tear of tires. The importance of certain relations between gear speed ratio and the useful range of engine speed, which was very pronounced in the days of small and uncertain engine power, is much reduced, yet these relations are still decisive for getting the best hill-climbing ability from a given proportion of power and weight.

The influence of gear ratio and useful engine speed has not so far been expressed in a formula, however, while old so-called hill-climbing formulas have been discarded as worthless for practical purposes, their place being taken largely by rules for car performance tests, as formulated or projected by the Society of Automotive Engineers (S. A. E. Bulletin, May, 1917, p. 141 to 155) and similar organizations in foreign countries.

If a car has four gear speeds proportioned as 1, 1.6, 2.6 and 4.2 and the useful engine speed ranges from 1200 to 1800 revolutions per minute, the vehicle speed on one of the gears at 1200 r.p.m. remains a little higher than it can be at 1800 r.p.m. on the next lower gear, which is 1.6 times slower, as $1200 \times 1.6 = 1920$. Such a car can drop to the next lower gear on any hill without losing much speed. If the ratio from gear to gear is 1.5, all the loss will be that due to the time required for acceleration and the lesser efficiency of the lower gear. With a ratio of 1.4, making the progression 1, 1.4, 1.96 and 2.75, these factors would be taken care of, and any hill could be ascended at the top speed possible with the power available.

Supposing the car has only three gearspeeds, 1, 2.4 and 5.76, the intermediate ratio being 2.4, then a grade of the hill rendering a lower gear necessary results in a loss of vehicle speed, as the engine speed can be raised only from 1200 to 1800, in the proportion of 1.5 to 1. while the gearspeed drops as from 2.4 to 1. With such a gear equipment the hill-climbing ability therefore depends on the grades of the hill. In competition with a car of equal power and weight having a 1.6 second gear, it will lose, if the hill is such as to make the 1.6 gear sufficiently powerful, but it will win if the grade is steep enough to compel the use of the 2.6 gear on the other car.

(*Continued on page* 1112)

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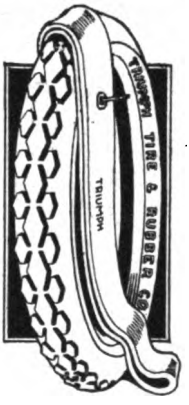

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Hill-climbing contests are therefore either a gamble on the suitability of certain gear ratios for certain hills, or else demonstrations of the self-evident fact that the principal requirement is high power per weight unit.

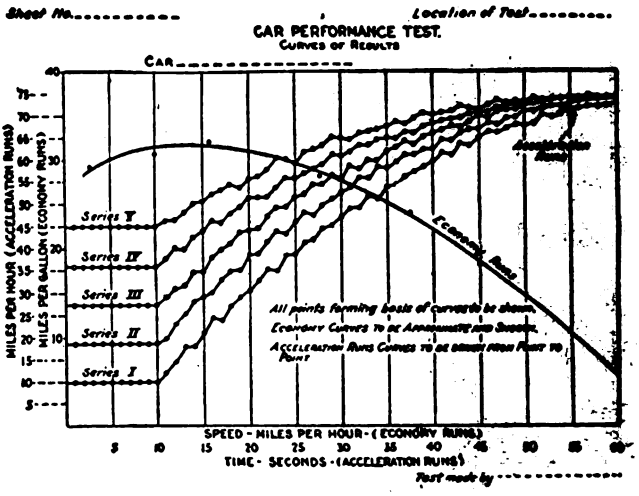
The torque curve of the engine would be a factor of more than minor importance if it were not considered beforehand in determining the "useful range of engine speed".

Hill-climbing tests are now resorted to mainly for determining the properties of one fuel in comparison with those of another fuel, the contesting cars being alike; or one carbureter against another; one kind of tires against another.

Complete Car Performance Tests

Tests relating to all the principal operative properties of a car are recommended by the Research Division of the Society of Automotive Engineers. The complete test includes a series of runs at various specified speeds from the minimum to the maximum speed of the car in order to determine fuel consumption and five series of acceleration runs, starting at various specified speeds from the minimum speed of the car on high gear to about 30 miles per hour. In each run the acceleration period allowed is 50 seconds.

To produce uniform conditions as a basis for comparisons, the recommendations include description and illustrations of the apparatus used, and detailed directions for conducting the runs, weighing the fuel, measuring the acceleration, and computing and recording the results. Forms also are provided for recording the specifications of the car and other pertinent data, for recording the observations and for plotting the results.



For the fuel economy runs, the amount of fuel used is determined by weighing in special tanks, and the distance covered is regulated by using measured courses of prescribing length and character. For the acceleration runs a recording instrument has been designed to produce on a continuous strip of moving paper parallel records of seconds and of distance. The seconds record is obtained from an electric chronometer, and the distance record by an electric spark puncturing the paper once for each one-fifth of a revolution of a front wheel of the car.

The results of the whole test are plotted on one chart in the form of curves as roughly indicated in the sketch herewith.

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$7.00

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This new Rapid Delivery Barrel Injector illustrated at left, fits on all Steel Barrels or Drums with standard 1½" or 2" bungs. No adjustments or fussy stop setting. Simply push lever to obtain desired amount of oil. Exactly measures ½ pints, pints and quarts. Equipped with Non-Drip nozzle and padlock. Made entirely from high-grade cast iron and brass. Gives quicker, better service than any "crank pump."

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Thermometer Scales

Fahrenheit	Centigrade	Reaumur	Fahrenheit	Centigrade	Reaumur
95	35	28	230	110	88
90					
86 (32.2)	30	24	221	105	84
80					
77 (26.6)	25	20	212 — 100	80	80 Boiling Point
70					
68 (21.1)	20	16	203	95	76
60					
59 (15.5)	15	12	194	90	72
50					
50	10	8	185	85	68
40					
41 (4.4)	5	4	176	80	64
32	0	0 Freezing Point	167	75	60
30					
23 (-1.1)	-5	-4	158	70	55
20					
14 (-6.7)	-10	-8	149	65	52
10					
5 (-12.2)	-15	-12	140	60	48
Zero 0					
-4 (-17.78)	-20	-16 (-14.22)	131	55	44
-10					
-13 (-23.3)	-25	-20	122	50	40
-20					
-22 (-28.9)	-30	-24	113	45	36
-30					
-31 (-34.4)	-35	-28	104	40	32
-40	-40	-32	95	35	28

METAL WORKING and HEAT-TREATMENT TEMPERATURES in FAHR and CENTIG. SCALES

Fahrenheit	Centigrade	
2100	1148.9	
2000	1093.3	1100
1900	1037.8	
1800	982.2	1000
1700	926.7	
1600	871.1	900
1500	815.5	800
1400	760	
1300	704.0	700
1200	648.9	
1100	593.3	600
1000	537.8	
900	482.2	500
800	426.7	
700	371.1	400
600	315.5	300
500	260	
400	204.4	200
300	148.9	
230		110

Fahrenheit:- $F = \frac{9}{5}C + 32$; also: $F = \frac{9}{4}R + 32$
Centigrade:- $C = \frac{5}{9}(F - 32)$ or $\frac{5}{9}F - 17.78$; also: $C = \frac{5}{4}R$
Réaumur:- $R = \frac{4}{9}(F - 32)$ or $\frac{4}{9}F - 14.22$; also: $R = \frac{4}{5}C$

For "Boiling Point of Water at Various Altitudes" see page 1236.

(*Continued on page* 1116)

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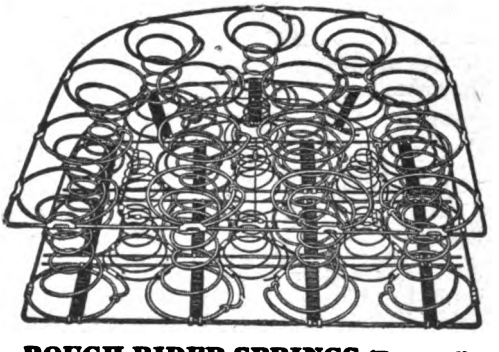

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Thermometer Scales—Continued

In order to convert degrees Fahrenheit (F.) into degrees Centigrade (C.), subtract 32, multiply the remainder by 5 and divide by 9. To turn Centigrade into Fahrenheit, multiply the number of deg. C. by 9, divide by 5 and add 32.

The Réaumur scale is still largely used in France. Five degrees C. equal 4 degrees R.

These relations are expressed in the formulas at the foot of the appended scales. They also indicate another mode of converting F. into C.; namely, multiply F. by 5/9 and deduct 17.78, the latter figure representing 32 × 5/9 or the number of degrees C. that the F. zero is lower than the C. zero. This mode of figuring has the advantage that it is not necessary to remember, or reason out, whether 32 is to be subtracted first or last. In converting from one scale to another, numerical values are taken as negative below the zero of each scale.

Baume Hydrometer and Specific Gravity Equivalents

For liquids heavier than water (such as electrolytes of storage batteries, electro-plating baths etc.), at 60° F.

$$\text{Specific gravity} = \frac{145}{145 - {}^{\circ}\text{Bé}} \quad \text{and Baumé} = 145 - \frac{145}{\text{Sp. Gr.}}$$

Baumé	Specific Gravity	Baumé	Specific Gravity	Baumé	Specific Gravity	Baumé	Specific Gravity	Baumé	Specific Gravity
0	1.000	10	1.074	20	1.160	30	1.260	40	1.381
1	1.006	11	1.082	21	1.169	31	1.271	45	1.450
2	1.014	12	1.090	22	1.178	32	1.283	50	1.526
3	1.021	13	1.098	23	1.188	33	1.294	55	1.611
4	1.028	14	1.106	24	1.198	34	1.306	60	1.705
5	1.035	15	1.115	25	1.208	35	1.318	65	1.812
6	1.043	16	1.124	26	1.218	36	1.330	70	1.933
7	1.050	17	1.132	27	1.228	37	1.342	....	....
8	1.058	18	1.141	28	1.239	38	1.355	....	....
9	1.066	19	1.150	29	1.250	39	1.367	....	....

For liquids lighter than water (gasoline and other engine fuels), the Baumé scale is based on the formula:

$$\text{Specific gravity (at 60° F.)} = \frac{140}{130 + \text{Bé}} \quad \text{or Baumé} = \frac{140}{\text{Sp. Gr.}} - 130$$

The scale is as follows

Baumé	Specific Gravity	Lbs. in Gal.	Baumé	Specific Gravity	Lbs. in Gal.	Baumé	Specific Gravity	Lbs. in Gal.	Baumé	Specific Gravity	Lbs. in Gal.
10	1.0000	8.33	31	0.8695	7.25	52	0.7692	6.42	73	0.6896	5.77
11	0.9929	8.27	32	0.8641	7.21	53	0.7650	6.39	74	0.6863	5.74
12	0.9859	8.21	33	0.8588	7.16	54	0.7608	6.36	75	0.6829	5.71
13	0.9790	8.16	34	0.8536	7.12	55	0.7567	6.32	76	0.6796	5.68
14	0.9722	8.10	35	0.8484	7.07	56	0.7526	6.29	77	0.6763	5.65
15	0.9655	8.05	36	0.8433	7.03	57	0.7486	6.26	78	0.6730	5.63
16	0.9589	7.99	37	0.8383	6.99	58	0.7446	6.22	79	0.6698	5.60
17	0.9523	7.94	38	0.8333	6.95	59	0.7407	6.19	80	0.6666	5.57
18	0.9459	7.88	39	0.8284	6.91	60	0.7368	6.16	81	0.6635	5.55
19	0.9395	7.83	40	0.8235	6.87	61	0.7329	6.13	82	0.6604	5.51
20	0.9333	7.78	41	0.8187	6.83	62	0.7290	6.10	83	0.6573	5.48
21	0.9271	7.73	42	0.8139	6.80	63	0.7253	6.07	84	0.6542	5.45
22	0.9210	7.68	43	0.8092	6.76	64	0.7216	6.03	85	0.6511	5.42
23	0.9150	7.63	44	0.8045	6.72	65	0.7179	6.00	86	0.6481	5.40
24	0.9090	7.58	45	0.8000	6.68	66	0.7142	5.97	87	0.6451	5.38
25	0.9032	7.54	46	0.7954	6.64	67	0.7106	5.94	88	0.6422	5.36
26	0.8974	7.49	47	0.7909	6.60	68	0.7070	5.91	89	0.6392	5.33
27	0.8917	7.44	48	0.7865	6.57	69	0.7035	5.88	90	0.6363	5.30
28	0.8860	7.39	49	0.7821	6.53	70	0.7000	5.85	....	.....	....
29	0.8805	7.34	50	0.7777	6.49	71	0.6965	5.82	....	.....	....
30	0.8750	7.29	51	0.7734	6.46	72	0.6930	5.79	....	.....	....

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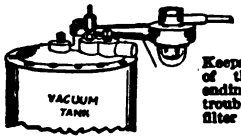

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Multiplies a thin, weak spark into large, blue white blaze of great igniting power.

Will instantly fire a bad plug gone dead because of cracked porcelain or fouled with carbon and oil.

Keeps the points clean and in perfect condition.

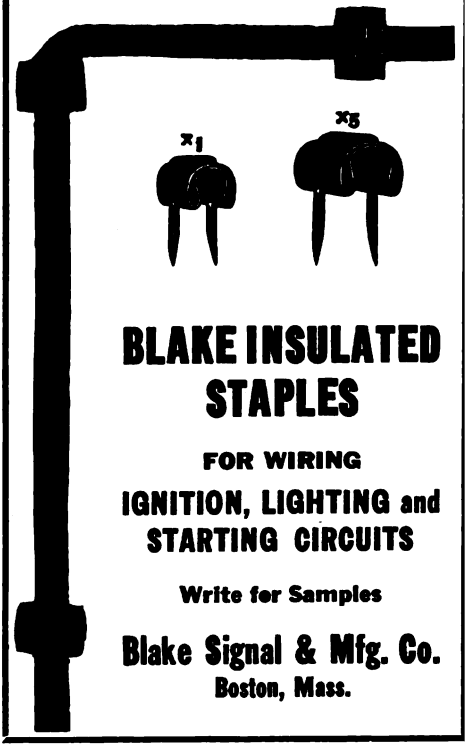
Means more power and greater economy because all gas is burned.

Price $1.00.

AUTOMAT-CO GASKET VAPORIZER

This vaporizer breaks up the gas as it enters the engine into a very fine mist. This insures instant ignition. Just the thing for cold weather. Can be attached in a few minutes. Sells for $1.00.

AUTOMOTIVE MATERIAL CO.
CHICAGO, ILL.



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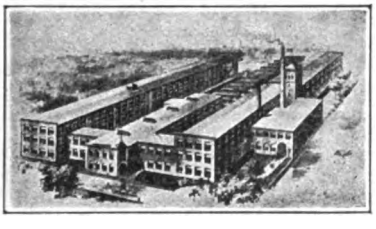

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A MODERN PLANT AND A SKILLED ORGANIZATION IS AT YOUR SERVICE

The world's largest manufacturers of Sewing Machine Attachments

The Greist Manufacturing Co.
NEW HAVEN, CONN.

Automobile Accessories and Contract Manufacturing

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Anti-Freezing Mixtures

The percentage of alcohol, by volume, to give a certain freezing point can be obtained from the table below:

Freezing Point, Degrees Fahrenheit	DENATURED		WOOD	
	Alcohol, per Cent.	Water, per Cent.	Alcohol, per Cent.	Water, per Cent.
+10	28	72	17	83
0	40	60	24	76
−10	52	48	31	69
−20	63	37	38	62

So little water is lost by evaporation that it is only necessary to add alcohol to the system from time to time, to replace that which is used up.

The proportions of glycerine and water may be obtained from the table:

Freezing Point	Glycerine	Water
+28 degrees Fahrenheit	10 per cent.	90 per cent.
+15 degrees Fahrenheit	30 per cent.	70 per cent.
+ 5 degrees Fahrenheit	40 per cent.	50 per cent.
0 degrees Fahrenheit	48 per cent.	52 per cent.
− 5 degrees Fahrenheit	54 per cent.	46 per cent.
−10 degrees Fahrenheit	58 per cent.	42 per cent.

The difficulties in the way of using glycerine and water alone have led to the use of a mixture containing alcohol in addition. The alcohol and glycerine are generally added in equal parts to the water, the amount depending upon the freezing point desired. The percentage of mixture to add may be obtained from the accompanying table:

Freezing Point	Mixture Glycerine and Alcohol	Water
+20 degrees Fahrenheit	15 per cent.	85 per cent.
+15 degrees Fahrenheit	20 per cent.	80 per cent.
+10 degrees Fahrenheit	24 per cent.	76 per cent.
+ 5 degrees Fahrenheit	27 per cent.	73 per cent.
0 degrees Fahrenheit	29 per cent.	71 per cent.
− 5 degrees Fahrenheit	30 per cent.	70 per cent.
−15 degrees Fahrenheit	32 per cent.	68 per cent.

Calcium chloride in water is another solution that has been used with success. When purchasing calcium chloride it is very important to ask for the chemically pure salt as the commercial variety contains free acid which reacts on the metal parts of the cooling system. If it is impossible to obtain the former, the latter may be made fit for use by neutralizing the acid. To do this add ammonia or soda ash gradually to the calcium chloride solution until blue litmus paper no longer turns pink when moistened with the solution. The amount of calcium chloride to use may be found from the table:

Pounds of Calcium Chloride per Gallon	Freezing Point,
2	+18.0 Degrees Fahrenheit
3	+ 1.5 " "
4	−17.0 " "
5	−39.0 " "

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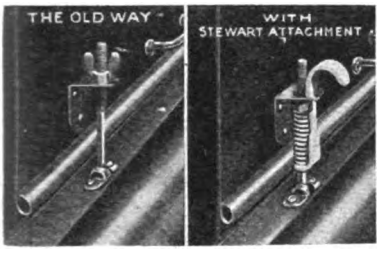

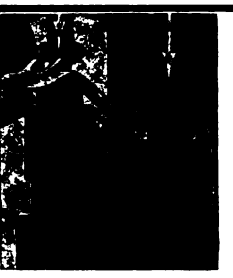

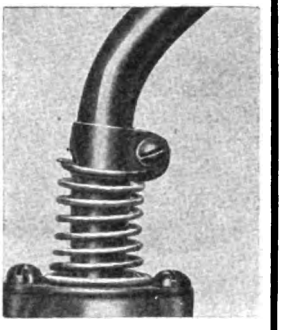

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Stewart Spring Hood Clamps . . . . List, $1.50
Stewart Valve Tappet Silencers . . . " 2.00
Stewart Gear Shift Anti-Rattler . . " .75

STEWART MFG. CO.
Incorporated OAKLAND, CALIFORNIA

BENTEL
Tonneau
WIND DEFLECTORS
Patented

Permit conversation between the two seats, while giving complete protection to those riding in the rear seat.
Strongly made, handsomely finished and easily attached.

Dealers and Jobbers write

THE ROBERT THOMPSON CO.
Manufacturers
1015 South Grand Ave., Los Angeles, Cal.

BATTERIES

Two Profits Are Better Than One

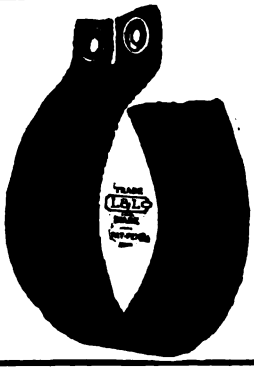
Superior Battery Dealers make not only the retail, but the usual distributors' profits.

If you think **two profits** are better than one, write us for the Superior Dealer proposition.

Made in a factory large enough to assure economical production, yet small enough to permit each workman to take personal pride in his work. We can offer your trade a quality battery with 18 months' guarantee.

Write for complete information.

SUPERIOR STORAGE BATTERY COMPANY
Kansas City, Mo.



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TRANSMISSION and BRAKE LINING

for **FORD CARS**

Goes on in one piece instead of three. Takes less than one-half hour to put on. No rivets or new felt gaskets required. Sells for $3 complete. Big profits and low labor cost for attaching make Libby's One-Piece Lining Your Best Bet. Jobbers, Dealers and Repairmen, write or wire for details and discounts.

L. & L. FOUR-ROLL TIMER

With 6 Big Features

1. Has laminated Rotor to insure even contact and long wear on roller.
2. Porcelain shell eliminates all short circuits.
3. Rotor does not work in idle spaces between contacts.
4. Every contact is a roller bearing.
5. Prevents Timer Wires from laying on the Greasy Crank Case pan.
6. Guaranteed for 366 days and nights.

Write us for discounts and prices

LIBBY AUTO ACCESSORIES, INC.
4 West 125th St. New York

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Measurement of Grades

The base of the triangle represents a line 100 feet long and the sloping lines different road grades. The first grade has a rise of 5 feet and is designated as a 5 per cent grade or a 1 in 20 grade. The distance from which the percentage is figured is not that actually traveled by a car in ascending such a slope but is the length of the base line of the slope. This system of measuring a grade (by the tangent of the angle of inclination and not by its sine) has come from the surveyor's practice of measuring grades on maps that show base lines and altitudes but not the actual length or angle of an incline.

A grade of 100 percent, under this accepted system, corresponds to an angle of 45 degrees, and not to 90 degrees as commonly supposed.

At the upper end of the second sloping line the elevation amounts to 6⅔ feet from a 100-foot base, and the grade is a 6⅔ per cent or 1 in 15 grade. Similarly, a 1 in 3 grade is the same as a 33⅓ per cent grade, a 1 in 2 grade the same as a 50 per cent grade.

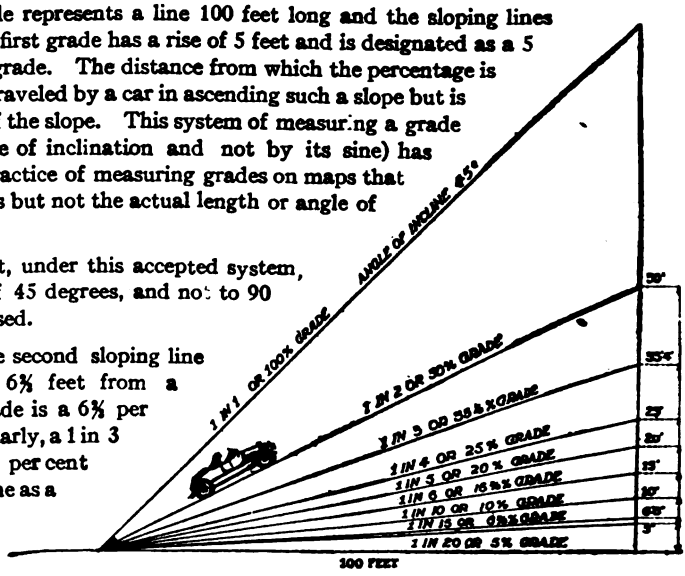

Table of Gradients

Slope	Percent Grade	Equal to Angle of	Rise or Fall in One Mile, Feet
1 in 5	20	11° 19′	1056
1 " 6	16.67	9° 26′	880
1 " 7	14.3	8° 09′	755
1 " 8	12.5	7° 08′	660
1 " 9	11.1	6° 17′	586
1 " 10	10	5° 43′	528
1 " 11	9.1	5° 11′	480
1 " 12	8.33	4° 46′	440
1 " 13	7.7	4° 24′	407
1 " 14	7.14	4° 05′	377
1 " 15	6.67	3° 49′	352
1 " 16	6.25	3° 35′	330
1 " 17	5.9	3° 22′	312
1 " 18	5.55	3° 11′	287
1 " 19	5.26	3° 00′	278
1 " 20	5	2° 52′	264
1 " 25	4	2° 18′	211
1 " 30	3.33	1° 55′	176
1 " 35	2.86	1° 38′	151
1 " 40	2.5	1° 26′	132

(Continued on following page)

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Rex

ALL-SEASONS TOP

There is a Rex All-Seasons Top that is specially designed and built for each of the following makes of touring cars and roadsters:

Dodge Brothers, Buick, Studebaker, Reo, Nash, Hudson, Essex, Paige, Lexington and others.

Shown on new models or applied to automobiles already in service, the Rex All-Seasons Top is proving a source of profitable sales for dealers everywhere.

Rex Manufacturing Company
Connersville, Indiana

Manufactured under license in Canada by Carriage Factories, Ltd. Orillia, Ontario

W. E. PRUDEN HARDWARE CO.

MANUFACTURERS REPRESENTATIVES AND JOBBERS

Automobile Supplies, Machinists Supplies, Iron, Steel, Metals, Electrical Supplies and General Hardware

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RECORD
Rim Adjuster

he Record Rim Adjuster can be applied to any demountble rim in a few minutes. Every car owner in your town, hose car is equipped with demountable rims, is a possible ustomer. Local distributors wanted in every city. Write r our special offer.

Record Accessories Corp.
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EQUIP YOUR RADIATOR WITH A

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Pat. April 11, 1916.

FOR FLAT FRONT RADIATORS

A Thermostatic Radiator Shutter entirely automatic in operation. Four special fasteners attach it in two minutes. No cutting—no soldering. In ordering state make and model of car.

PINES MANUFACTURING CO.
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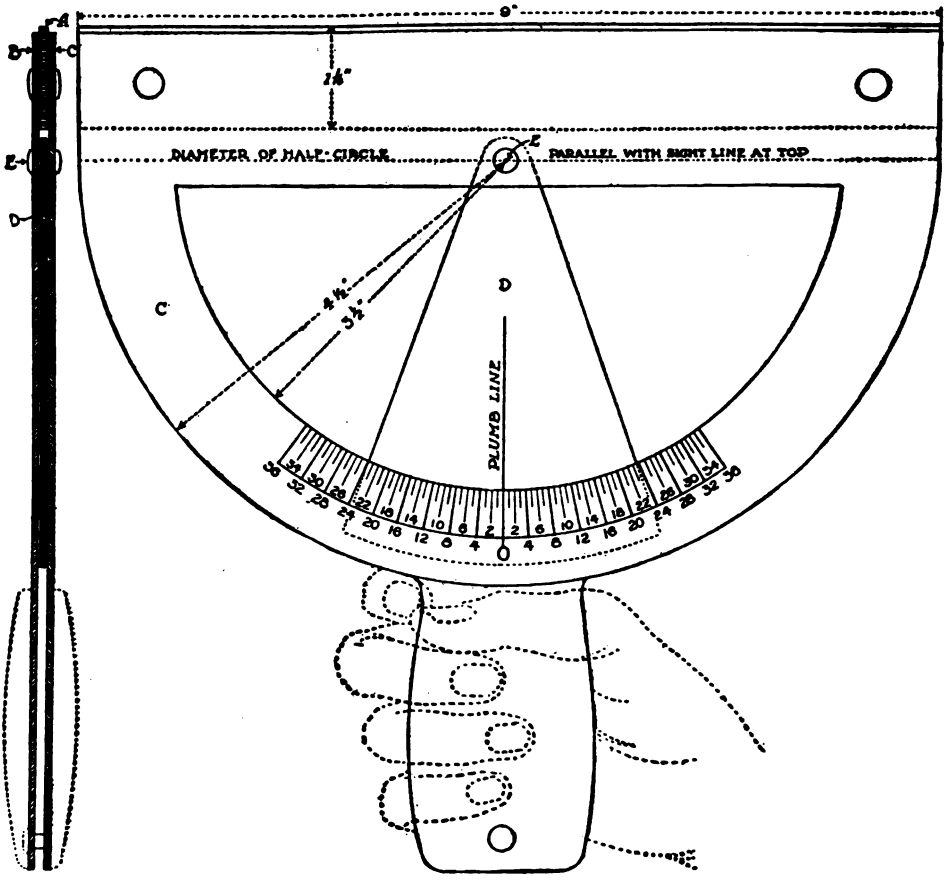
Measuring Grades from a Car

Neither the rise nor the length of the base line of a hill can be ascertained without careful surveying, and in automobile practice (such as in reporting road conditions) it is therefore necessary to find the grade by first measuring the angle of inclination, and then looking up the grade corresponding to this angle in a table compiled for this purpose.

A simple instrument for measuring the angle can be made on the plan shown in the illustration, as proposed by M. C. Krarup. Two pieces, *B* and *C*, of the shape shown are cut out of sheet brass about $\frac{1}{16}$ inch thick. A segment is cut out of *C* in order to render visible the triangular pendulum *D* suspended on a pin *E* between the two pieces. The pendulum can be cut from the same material as *B* and *C* and is marked with a line that is perfectly perpendicular when the pendulum hangs freely. A dial is marked along the open arc on *C*. With the dimensions indicated, this dial can show degrees, and fractions of degrees can be estimated. *B* and *C* are spaced apart by a straight-rule *A* about 1" broad projecting $\frac{1}{16}$ inch above their upper edges, its own upper edge affording a sighting line. *A* is of slightly thicker material than the pendulum, so that the latter has room to swing freely. The handle-pieces are not more than 3 inches long and 1⅛ inch broad, and a pin at their lower end spaces them apart when they are held loosely in the hand. Wood facings secured to these handle-pieces improve the device. On the back of *B* is pasted the Table of Grades and Corresponding Angles of Inclines on the following page.



In operating, one sights over the edge of *A*, bringing it in line with the top of the hill. *D* swings around an angle equal to the angle of inclination, and the mark on *D* points out this angle on the dial. In this position *D* is held by squeezing the handle a little, and the angle can be read with a turn of the hand. The grade corresponding to this angle can be read from the table pasted on the other side of the device with another turn of the hand.

As the instrument held in the hand is about five feet above the ground at the foot of the hill, the angle, as read, is a little too small. To correct this, one sights again from the top of the hill to the foot, which gives an angle a little too large. The mean of the two angles is the correct one. Also, one reading checks the other.

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Red Seal Rubber & Cement Co.

Passaic, N. J.

Revolutionizes Rubber Repairing

Price $1.50 the Tube

The Most Profitable Seller

Removes the last objection the average motorist has against tire and tube patching. It's so easy. No patches, no vulcanizing, no heat, no delay. Nothing but a cement of new composition. Furnished in attractive counter display cases; sold at $1.50 retail.

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Mileage SERVICE Guaranteed

RIMCO WIPE TIMER

Manufactured entirely under one roof

Guaranteed for 10,000 Miles

It starts easy. Ends timing trouble. Begins a new era of Pep, Power and Performance in your Ford motor. All wearing parts made of specially treated steel and replaceable. No necessity to buy a new timer because one part wears out. Remember this for economy. Runs in grease. No daily oiling.

Dealers! Better Investigate this Snappiest Seller of All.

Write for Special Introductory Offer.

We recommend Rimco Timer Grease for best results.

RIBLET MANUFACTURING CO.

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Keeps Track of Everything

Increase your profits and stop the leaks. When you start right your records are easily kept. Keep track of what customers want done, keep a record of sales of parts, of supplies, oils, and grease by using

American Automatic Aliner

Test it yourself. It issues a set of clean tickets, duplicating, triplicating or quadruplicating. Always ready for entry. Never out of order. Keeps track of any transaction.

Write for interesting descriptive folder entitled, "Make The Test Yourself."

American Sales Book Co., Ltd.

Elmira **New York**

See telephone book for local branch office.

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Table of Grades and Corresponding Angles of Inclines.

(Grade Percent Equals Numerical Value of Tangents of Angle with Radius 100)

Angle, Degrees	Grade, Percent	Angle, Degrees	Grade, Percent	Angle, Degrees	Grade, Percent
½	0.87	12½	22.17	24½	45.57
1	1.74	13	23.09	25	46.63
1½	2.62	13½	24.01	25½	47.70
2	3.49	14	24.93	26	48.77
2½	4.37	14½	25.86	26½	49.86
3	5.24	15	26.80	27	50.95
3½	6.12	15½	27.73	27½	52.06
4	7.00	16	28.68	28	53.17
4½	7.87	16½	29.62	28½	54.30
5	8.75	17	30.57	29	55.43
5½	9.63	17½	31.53	29½	56.58
6	10.51	18	32.49	30	57.74
6½	11.39	18½	33.46	30½	58.91
7	12.28	19	34.43	31	60.09
7½	13.17	19½	35.41	31½	61.28
8	14.05	20	36.40	32	62.49
8½	14.95	20½	37.39	32½	63.71
9	15.84	21	38.39	33	64.94
9½	16.73	21½	39.39	33½	66.19
10	17.63	22	40.40	34	67.45
10½	18.53	22½	41.42	34½	68.73
11	19.44	23	42.45	35	70.02
11½	20.35	23½	43.48	35½	71.33
12	21.26	24	44.52	36	72.65

Carrying Capacities and Inflation Pressures of Pneumatic Tires

Revised S. A. E. Standards, Abbreviated

Tire Size		Maximum Load		Corresponding Inflation Pressure	
In.	Mm.	Lb. per Tire	Kg. per Tire	Lb. per Sq. In.	Kg. per Sq. Cm.
3	75	375	170.1	45	3.16
3½	90	570	258.5	55	3.87
4	105	815	369.7	65	4.57
4½	120	1100	498.9	75	5.27
5	135	1300	589.7	80	5.62
5½	.....	1700	..	85	.....
6	150	2000	907.2	90	6.33
7	175	2700	1225.0	100	7.03
8	200	3650	1655.5	110	7.73

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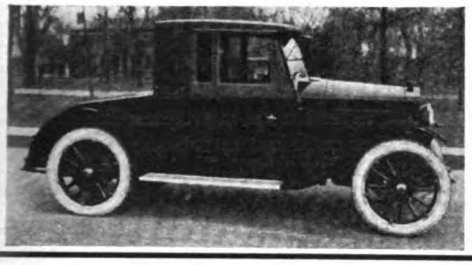
Permanent GABEL TOPS Attachment



Standardized models for roadster and touring cars for—

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ROCHESTER, N. Y.

BUSHINGS
BRASS and BRONZE

We specialize on finished brass and bronze bushings used for motors, transmissions, axles, spring eyes, frames, steering gears, pumps, etc.

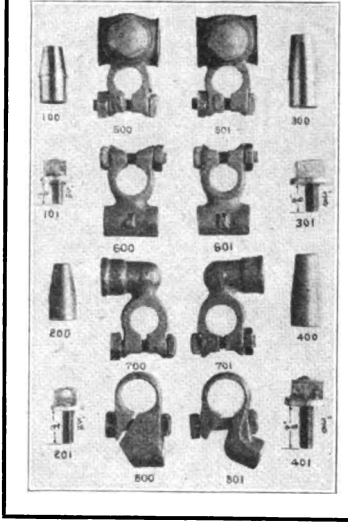
Mixture and analysis of metals, working limits, production, etc., are guaranteed to conform to your specifications.

Deliveries on schedule are assured. Our representative will call at your request.

Superior Brass Works
Detroit, Michigan

DEPENDABLE PRODUCTS

BATTERY TOOL PARTS SUPPLIES



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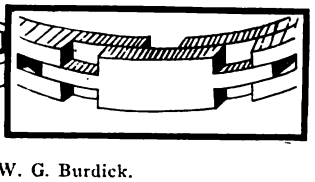

GRA-SEAL PISTON RINGS

Perfected and patented with the Strongest Patent since 1886 by W. G. Burdick.

Installed in U. S. Government and other cars, and in every instance increased the mileage on gasoline from 15% to 40%, reduced oil consumption from 25% to 50%, eliminated carbon and dirty spark plugs, and after four years' actual service are still doing the work.

Write for our terms to the trade

UNIVERSAL PISTON RING COMPANY **1426 Rock Street, Rockford, Illinois**
The A. J. Alsdorf Corporation, Exclusive Foreign Distributors, Chicago, U. S. A.

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Types and Dimensions for Pneumatic Tires and Rims

(1918 Standards S. A. E.)

The Tire and Rim Division of the S. A. E., the Tire and Rim Association and the Nationa Automobile Chamber of Commerce have formulated and agreed upon a program for simplifying the variety in dimensions and types of pneumatic tires and rims, as follows:

CLASS A.—Approved standard.

Nominal Tire and Rim Sizes		Oversize Tire		Tire-Seat Dia. (Rim)		Type of Rim
Inches	Mm.	Inches	Mm.	Inches	Mm.	
30×3½	90/585	31×4	105/585	23	585	Clincher
32×3½	90/635	33×4	105/635	25	635	Straight Side
33×4	105/635	34×4½	120/635	25	635	Straight Side
34×4½	120/635	35×5	135/635	25	635	Straight Side
36×6	150/610	38×7	175/610	24	610	Straight Side
38×7	175/610	40×8	200/610	24	610	Straight Side
40×8	200/610	.....	.....	24	610	Straight Side

CLASS B.—List of sizes, production to be discontinued November, 1920.

Clincher	Q. D. Clincher
30×3 Plain and Non-Skid	35×5 Non-skid

Straight Side

32×4 Plain and Non-skid	35×4½ Plain and Non-skid
34×4 Plain and Non-skid	33×5 Non-skid
32×4½ Plain and Non-skid	37×5 Non-skid
33×4½ Non-skid	

CLASS C.—List of sizes, production to be discontinued November, 1919.

Clincher	Straight Side	Q. D. Clincher (Non-Skid)
None	33×4½ Plain 36×4½ Non-skid	35×4½ 37×5

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Phoenix Products

Screw Machine Parts

From ¾ Inch Up to 2½ Inch Diameter

Grinding Work
Spring Shackle Bolts
Valve Tappets

We Positively Guarantee Service and Quality

Phoenix Manufacturing Co.
Detroit, Mich.
FACTORY AND OFFICES:
Loraine and Grand River Aves.

PHILBRIN IGNITION

Makes an End of Ignition Troubles

The present-day low grade gasoline, which causes so much trouble for the average ignition system, has an abundance of real power 'way down in its sluggish depths.

And it was left for Philbrin to get at and utilize this latent source of energy. The invention of the Philbrin contact maker and condenser has resulted in a new conception of ignition efficiency. The Philbrin spark is intensified, big-bodied, rending—greatly increasing the horsepower and flexibility of a gasoline motor. Fuel mileage is increased. By the use of the High Frequency System (a feature of Philbrin Duplex Ignition) all starting difficulties are overcome and plug fouling is prevented.

You can install Philbrin Ignition in place of any system you are now using.

PHILBRIN CORPORATION
507 S. Broad St., Kennett Square, Pa.

OUR TIRES
MADE and SOLD

represent an investment by the public of
MILLIONS
in
THOUSANDS
of
TIRES

This shows the
UNIVERSAL APPRECIATION
of
OUR TIRE
and it should convince you of its
SUPREME MERIT.

The sale of one of our tires to your customer compels his permanent patronage.

Write for Dealers' Proposition.
Your Opportunity for Sales and Profit.

The Pharis Tire & Rubber Co.
Newark, Ohio

Electrical Testing Devices for Garages and Ford Service Stations

The Ford Motor Car Company have requested all its service stations to install electrical testing devices.

In line with this request it will pay garage and repair men to investigate the Onan Electrical Testing Device. Much cheaper than other similar devices, it has proven itself in actual service to be absolutely dependable and accurate. Prices from $55.00 to $80.00. Send for illustrated literature.

DAVID W. ONAN, Penn and 14th Aves., N. Minneapolis, Minn

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CLASS D.—List of sizes, production to be discontinued November, 1918.

Clincher Non-Skid	Straight Side	
32×3½	30×3½ Non-skid	36×4½ Plain
33×4	35×4 Non-skid	37×4½ Non-skid
	29×4½ Non-skid	33×5 Plain

Q. D. Clincher (Non-Skid)

32×3½	33×4	32×4½	33×4½	34×4½	36×4½

CLASS E.—The production of all sizes and types of tires not mentioned in any of the preceding four classes shall be discontinued at once.

INCH NOMENCLATURE

In inch nomenclature, nominal tire diameter = tire-seat diameter + twice tire cross-section diameter. Sizes are designated by giving outside diameter of tire and tire-section diameter, as (30×3½).

METRIC NOMENCLATURE

In metric nomenclature, the nominal diameter = tire-seat diameter. Sizes are designated by giving tire cross-section diameter and tire-seat diameter. When spoken, the size is referred to as "90 for 585"; but is branded as 90/585.

DETACHABLE AND PLAIN CLINCHER RIMS

Valve holes in wood felloe for detachable and plain clincher rims to be same diameter as valve hole in steel rim.

VALVE-HOLE SIZE, AUTOMOBILE RIMS

The valve hole in automobile rims for standard tire sizes shall be ⅝ in. diameter up to 4½-in. rims, inclusive. Valve-hole sizes for 6, 7 and 8-in. rims are not standardized.

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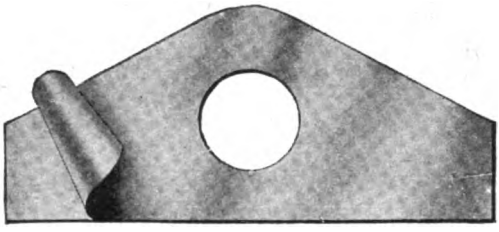

FIT-ALL—The shim that can be cut to fit.
1/32 in. thick $3.00 per box of 25
1/64 in. thick $2.00 per box of 25

Holes already punched, 13/32 in. for 3/8 in. bolts; 17/32 in. for 1/2″ and 7/16″ bolts. Laminations .003 in.

STOCK LAMINATED SHIMS

In packages of 25. Specify thickness.

MAXWELL
CONNECTING ROD
1-64 in. thick, 4c each
1-32 in. thick, 6c each
1-16 in. thick, 10c each

CHEVROLET FOUR-NINETY
CONNECTING ROD
1-64 in. thick, 4c each
1-32 in. thick, 6c each
1-16 in. thick, 10c each

DODGE
CONNECTING ROD
1-64 in. thick, 5c each
1-32 in. thick, 7c each
1-16 in. thick, 12c each
1-8 in. (1-16 in. steel, 1-16 in. laminated) 15c each

DODGE CRANK-SHAFT
Front, Center & Rear Bearing
1-64 in. thick, 6c each
1-32 in. thick, 8c each
1-16 in. thick, 12c each
1-8 in. thick, 16c each

FORD SHIM No. 1 CRANK-SHAFT
REAR BEARING
1-64 in. thick, 8c each
1-32 in. thick, 13c each

FORD SHIM No. 2 CRANK-SHAFT
FRONT AND CENTER BEARING
1-64 in. thick, 6c each
1-32 in. thick, 9c each

FORD SHIM No. 4
CONNECTING ROD
1-64 in. thick, 5c each
1-32 in. thick, 6c each

OVERLAND
CONNECTING ROD
1-64 in. thick, 5c each
1-32 in. thick, 7c each
1-16 in. thick, 12c each

CONTINENTAL 7-W
CONNECTING ROD
1-64 in. thick, 4c each
1-32 in. thick, 5c each
1-16 in. thick, 10c each

CONTINENTAL 7-N
CONNECTING ROD
1-64 in. thick, 4c each
1-32 in. thick, 6c each
1-16 in. thick, 10c each
1-8 in. thick, 20c each

To adjust bearing with Laminated Shims simply peel off the brass layers with a knifeblade until the shim fits. Any shape furnished to order. Babbitted to make a complete babbitt bearing if desired. Laminum in sheet 6 x 36 inches, all Laminum or part solid brass. Write for specifications and prices.

LAMINATED SHIM COMPANY, INC.,

47 West 34th Street, New York

Detroit.....Dime Bank Building **St. Louis.....Mazura Mfg. Co.**
Chicago.....1118 S. Michigan Ave.

LAMINUM

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Tire Loads and Inflation Pressures

RECOMMENDED BY DIFFERENT TIRE MANUFACTURERS

Several tire manufacturers refrain from giving directions. Others recommend the S. A. E. schedule. Varying recommendations are given in the following, slightly abbreviated:

Continental Rubber Works: Twenty pounds pressure per inch of tire cross-section. No load rule.

Quaker: Same.

National Rubber Co.: Same inflation (20 pounds per inch). Load rule for car "without passengers":

Cross section	3	3½	4	4½	5		
Diameter	28 to 30	30 to 34	31 to 36	34 to 36	35 to 37		
Wheel oad	350	450 to 600	600 to 750	900 to 950	1000 to 1100		

Portage Rubber Co.: Same inflation (20 pounds per inch). Load rule, for "gross weights." Distinguishes between front and rear tires:

Cross section	3	3½	4	4½	5		
Diameter	28 to 32	30 to 36	30 to 40	32 to 42	35 to 38		
Rear wheel load	350 to 375	450 to 600	625 to 850	750 to 1200	1000 to 1200		
Front wheel load	425 to 450	550 to 700	750 to 1000	950 to 1450	1250 to 1450		

Hood: Inflation about 18 pounds per inch. Recommends rear tires stronger than front tires. Scale as follows:

Cross section	3	3½	4	4½	5	5½	
Diameter	28 to 34	30 to 34	31 to 37	32 to 37	35 to 37	37 to 38	
Inflation	55	65	70	80	90	100	
Wheel load	300 to 400	400 to 475	675 to 825	850 to 975	1050 to 1100	1275 to 1300	

Mason: Loads are per "gross weights." Odd sizes intended as oversize tires for smaller rims have relatively reduced loads.

Cross section	3	3½	4	4½	5	5½	6
Diameter	28 to 32	29 to 34	30 to 37	32 to 41	34 to 43	36 to 38	39
Inflation	60	70	80	90	90	100	100
Rear wheel load	350 to 375	400 to 600	600 to 750	725 to 1125	1000 to 1450	1200 to 1400	1600
Front wheel load	425 to 450	475 to 700	730 to 900	875 to 1375	1250 to 1700	1500 to 1600	1750

Century-Plainfield tires follow practically the same schedule.

Acme: Loads are for "gross weights." Inflation uniformly 20 pounds per inch.

Cross section	3	3½	4	4½	5	5½	
Diameter	28 to 32	28 to 36	30 to 36	32 to 38	35 to 43	36 to 38	
Inflation	60	70	80	90	100	110	
Rear wheel load	350 to 375	425 to 600	625 to 750	750 to 1050	1000 to 1450	1300 to 1600	
Front wheel load	425 to 450	500 to 700	750 to 900	950 to 1300	1250 to 1650	1550 to 1650	

(*Continued on following page*)

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Does The Work of Ten Tools

This device will outlast any valve seat facer on the market, is instantly adjustable to any size valve, and will save you about 66% on the cost of the tools required at present to accomplish the same work. It is the only adjustable and interchangeable valve seat facer manufactured. The jaws are made of Tool Steel, properly hardened, and are as strong and accurate as a solid facer. This tool takes the place of TEN separate facing tools now necessary. The pilot stems are interchangeable and will fit any size valve stem accurately.

The ten separate tools will cost you $36.00. The price of our Facer is $12.00, and it will do more and better work than the expensive set, and besides is adjustable to all "off" sizes.

Patented August 10, 1920
All infringements on this patent will be prosecuted
Jobbers and Dealers Please Write

HOERNER MFG. CO.

3929 MONETA AVE. LOS ANGELES, CALIF.

TOLEDO VALVES

BECAUSE of their quality and consistent performance have established for themselves an enviable reputation, and are now considered STANDARD EQUIPMENT by many of the largest and most discriminating manufacturers of motors, trucks, tractors, pumps, compressors, motor cars, engines, locomotives and motorcycles in this country and abroad.

THE TOLEDO STEEL PRODUCTS COMPANY
Formerly THE LEWIS STEEL PRODUCTS COMPANY
TOLEDO, OHIO

A message to car manufacturers

HOUDAILLE HYDRAULIC SUSPENSION
(HOO - DIE)

The Ultra Shock Absorber for the finest cars made

STANDARD EQUIPMENT ON:

Alba, Alda, Cunningham, Chenard & Walcker, Delage, Delaunay, Belleville, Farman, Minerva, Panhard & Levassor, Peugot, Piccard & Pictet, Rochet-Schneider, Secqueville and Hoyau, Unic (G. Richard Zedel) and many other well known cars.

THE HOUDAILLE CO. 1335 Root Bldg. BUFFALO, N. Y.

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Fisk Rubber Co. gives a scale which in practice varies little from the proposed S. A. E Standard, with inflation pressures close to 15 pounds per inch of cross-section, as follows:

Tire Sizes	Maximum weight per wheel with load (including passengers) for sizes specified (Weight includes 150 lbs. for each passenger and 100 lbs. for extra equipment.)													
	300	400	500	600	700	800	900	1000	1200	1400	1600	1800	2000	2200
3 × 28–34	60	65												
3½ × 30–32		60	65	70										
34–36			65	70	75									
4 × 32–36				65	70	75	80							
38–42					65	70	75	80						
4½ × 34–36							70	75	80	85				
38–42								70	75	80	85			
5 × 36									75	80	85			
38–40										75	80	85		
5½ × 38–40				Air	Pre	ssur	es					80	90	
6 × 40													85	95

Miller Rubber Co. presents a sliding scale of loads and inflation pressures for each tire size, as follows:

Size	Weight Carried	Air Pressure
28 × 3	250 lbs.— 400 lbs.	35 lbs.— 50 lbs.
30 × 3	300 " — 500 "	35 " — 55 "
30 × 3½	400 " — 650 "	45 " — 65 "
31 × 3½	300 " — 650 "	40 " — 65 "
32 × 3½	500 " — 700 "	50 " — 65 "
31 × 4	500 " — 800 "	45 " — 65 "
32 × 4	600 " — 850 "	50 " — 70 "
33 × 4	650 " — 850 "	55 " — 75 "
34 × 4	700 " — 950 "	55 " — 80 "
36 × 4	700 " — 950 "	55 " — 80 "
34 × 4½	800 " —1000 "	50 " — 80 "
35 × 4½	800 " —1000 "	50 " — 80 "
36 × 4½	900 " —1200 "	55 " — 85 "
37 × 4½	900 " —1300 "	60 " — 85 "
35 × 5	900 " —1350 "	60 " — 90 "
36 × 5	1000 " —1450 "	65 " — 90 "
37 × 5	1050 " —1600 "	65 " — 90 "
38 × 5½	1100 " —1900 "	65 " —100 "

Michelin prescribes finding front and rear axle loads with all seats occupied and gasoline and water tanks filled. Apart from oversize tires, the following scale is then recommended (ignoring diameters):

Axle Loads, Lbs.	Tire Sizes	Inflation Pressure, Lbs.
600 to 800	3	45
800 to 1000	3	50
600 to 1000	3½	50
1000 to 1400	3½	60
1400 to 1800	3½	70
1200 to 1600	4	50
1600 to 2000	4	60
2000 to 2400	4	70
1600 to 2000	4½	55
2000 to 2400	4½	65
2400 to 2800	4½	75
2200 to 2600	5	55
2600 to 3000	5	65
3000 to 3400	5	75

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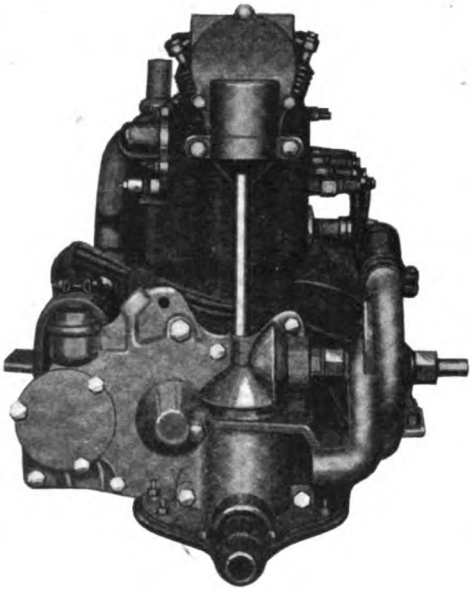


CRAIG-HUNT HEADS

HOLLOW CRANKSHAFTS
SPEEDWAY BODIES
UNDERSLUNG PARTS

SPECIAL RATIO RACING GEARS
RACING PISTONS
SPECIAL RACING SPARK PLUGS
OIL AND WATER PUMPS

HIGH TENSION MAGNETOS
LIGHT WEIGHT CONNECTING RODS
COUNTERBALANCES FOR CRANKSHAFTS
WIRE WHEELS STEERING GEARS

This is a Ford Motor, rebuilt with our Speed Specialties, making it a high speed twin valve—valve-in-head—racing motor.

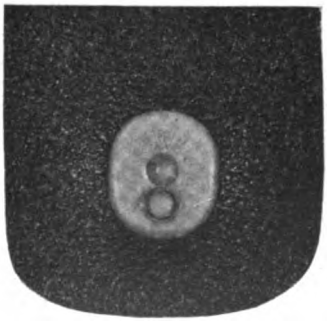
"EVERYTHING FOR SPEED"

Write for Complete Catalogue

Speedway Engineering Company

910 NORTH ILLINOIS STREET
INDIANAPOLIS, INDIANA, U. S. A.

The Shaw Lock Fastener



Simply press a button and the Shaw Lock Fastener stays fastened until it is desired to undo it, and presto—it is just as easily unfastened.

Shaw Manufacturing Company

126 Massachusetts Ave., Boston, 17, Mass.

ALSO MANUFACTURERS OF BALL JOINTS

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Republic Rubber Co. presents another elaborate scale as follows:

Inflation Pressure	Weights per wheel that may be carried under each tire section diameter						
	3"	3½"	4"	4½"	5"	5½"	6"
30	240						
35	280	350					
40	325	400	485				
45	365	450	545	660			
50	**405**	505	610	735	860	985	1125
55	450	**555**	675	810	945	1085	1240
60	490	605	**735**	885	1035	1185	1355
65		660	800	**960**	1120	1285	1465
70		710	860	1035	**1210**	1385	1580
75			925	1110	1295	**1485**	**1700**
80			985	1185	1385	1585	**1910**
85				1260	1470	1685	**1925**
90				1335	1555	1785	**2035**
95					1645	1885	**2150**
100						1985	**2265**

and adds the following directions:

"Pressure varies according to amount of load carried. Weigh separately front and rear of fully loaded car, and divide each weight by two, this will give the weight on each wheel. The tire should be inflated to the pressure given in the extreme left hand column that most nearly corresponds to the load weight under sectional diameter of tire used.

"Heavy-faced type in each column shows the ideal load for rear wheels. A heavier load, as figures under each sectional diameter indicate, may be carried, but owing to the added air pressure necessary to get good tire mileage, it is not desirable. Loads should not exceed the maximum figures at the bottom of each column."

Goodyear Tire & Rubber Co. presents a scale identical with the preceding one, excepting that the prescribed loads are 10 to 15 pounds higher, and that 10 per cent lower inflation pressures are recommended for cord tires.

For *United States* tires a uniform scale of 20 pounds of inflation pressure per inch of tire section is recommended (including 120 pounds pressure for 6-inch tires) in conjunction with a load scale, about which it is said: "The following is a list of the weights which tires of the different sizes are designed to carry, sufficient allowance being made for the usual number of passengers (cars to be weighed without passengers or luggage)":

Tire Dimensions	Rear Weight per Wheel, Lbs.	Front Weight per Wheel, Lbs.	Tire Dimensions	Rear Weight per Wheel, Lbs.	Front Weight per Wheel, Lbs.	Tire Dimensions	Rear Weight per Wheel, Lbs.	Front Weight per Wheel, Lbs.
28 × 3	350	425	34 × 4	700	875	34 × 5	950	1200
30 × 3	375	450	35 × 4	735	885	35 × 5	1000	1250
32 × 3	375	450	36 × 4	750	900	36 × 5	1050	1300
			37 × 4	800	925	37 × 5	1100	1350
28 × 3½	425	500	40 × 4	850	1000	39 × 5	1200	1450
29 × 3½	425	500	42 × 4	900	1050	43 × 5	1400	1550
30 × 3½	450	550						
31 × 3½	475	575						
32 × 3½	500	600	32 × 4½	750	950	34 × 5½	1000	1250
33 × 3½	525	625	33 × 4½	800	1000	35 × 5½	1050	1300
34 × 3½	550	650	34 × 4½	900	1125	36 × 5½	1100	1350
36 × 3½	600	700	35 × 4½	935	1175	37 × 5½	1150	1400
			36 × 4½	975	1225	38 × 5½	1200	1450
30 × 4	625	750	37 × 4½	1010	1260			
31 × 4	635	775	38 × 4½	1050	1300			
32 × 4	650	800	40 × 4½	1100	1350	37 × 6	1600	1750
33 × 4	675	850	42 × 4½	1200	1450	39 × 6	1800	2000

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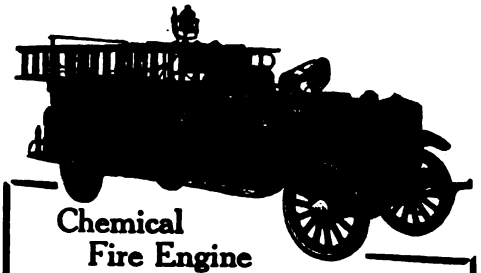
"THE BOYER"



Chemical
Fire Engine
(1½-Ton Truck)

HOSE BODY—

Capacity for 1000 ft., 2½ in., Double Jacket water hose.

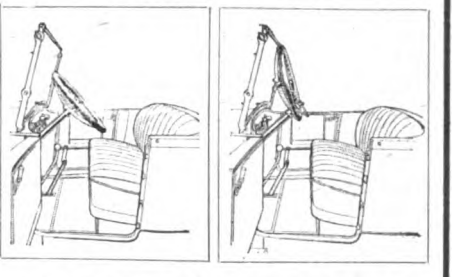
TANKS—

Two chemical tanks of 35 gal. capacity. One tank recharging while others discharge.

We can build our equipment on any make chassis

The Obenchain-Boyer Co.
Logansport, Ind.
U. S. A.

NEVILLE
"MORE-ROOM"
STEERING WHEEL



The advantages of this steering wheel are apparent. The eight inches more room behind the driving wheel appeals to car owners. Over 50,000 have been sold by car owner recommendation.

The demand exists—is constantly growing. Motor car and accessory dealers who feature Neville wheels are well repaid for their time and effort. Customers are satisfied and profits are multiplied.

Neville wheels are beautifully finished, simple, easily installed and operated and add to the beauty of any car.

Dealers demonstrating stand free.

Write for our sales proposition.

Neville Steering Wheel & Mfg. Co.
Detroit, Mich.

QUALITY N FIRST

The Mark of Dependability

Manufacturers of
Ignition Repair Parts
Starting and Lighting Brushes
Magneto and Generator Couplings
Contact and Brush Assortment Cabinets

Marketed by the Discriminating Trade

Write for Catalog "I"

A. NELSON MFG. COMPANY
2700 Southport Ave.
CHICAGO

This is display cabinet No. 10

By actual engineering test, you get 60% greater gripping power when you use

NEVER SLIP

LOCK WASHER

The display stand shown above is in all good auto supply shops. There's a special, convenient box of assorted sizes for garages, etc. Ask about "Assortment No. 5"

Write for price lists and complete information

National Umbrella Frame Company
30th & Thompson Sts. Philadelphia, Pa.

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For *Kelly-Springfield* tires the following list is given, the weights to be understood as "gross weights per wheel (car empty)":

Size	Inflation Pressure, Lbs.	Rear Weight, Lbs.	Front Weight, Lbs.	Size	Inflation Pressure, Lbs.	Rear Weight, Lbs.	Front Weight, Lbs.
28 × 3	60	350	450	32 × 4½	85	800	975
30 × 3	60	375	475	33 × 4½	85	850	1050
32 × 3	60	375	475	34 × 4½	85	900	1125
				35 × 4½	85	950	1150
30 × 3½	65	475	575	36 × 4½	85	1000	1225
31 × 3½	65	500	600	37 × 4½	85	1050	1250
32 × 3½	65	525	625	38 × 4½	85	1100	1300
33 × 3½	65	550	650	40 × 4½	85	1125	1375
34 × 3½	65	575	675	42 × 4½	85	1250	1450
36 × 3½	65	600	700				
30 × 4	75	550	700	34 × 5	90	1000	1250
31 × 4	75	575	725	35 × 5	90	1050	1300
32 × 4	75	600	750	36 × 5	90	1100	1350
33 × 4	75	625	775	37 × 5	90	1150	1400
34 × 4	75	650	800	39 × 5	90	1250	1500
35 × 4	75	675	825				
36 × 4	75	700	850	36 × 5½	100	1275	1500
37 × 4	75	725	875	37 × 5½	100	1300	1550
40 × 4	75	800	950	38 × 5½	100	1350	1600
				39 × 6	100	1600	1750

In addition, millimeter sizes and interchangeable sizes are listed.

For *Goodrich* tires no scale of inflation pressures or maximum loads is offered. The use of an instrument called the Goodrich Tire Caliper-Gauge is recommended as more satisfactory, in the following words:

"A tire must be inflated for the load which it actually carries; an arbitrary inflation schedule of 18 or 20 pounds pressure per cross sectional inch is fallacious. Obviously it is foolish to use the same pressure for a four-inch tire carrying 400 lbs. weight on a roadster as that in a four-inch tire carrying 750 lbs. weight on a touring car.

"The Goodrich Tire Caliper-Gauge measures the flattening or deflection of the tire at the point where it touches the ground. If the deflection is so great that the tire will be injured when running, the Caliper-Gauge indicates that fact exactly. It is the only scientific way of procuring inflation for the load which the tire actually carries."

The *Firestone* Tire and Rubber Co. recommends for front wheels 15 to 18 pounds of inflation per inch of tire section and for rear wheels 15 to 20 pounds. The loads ("per wheel, car empty") are given in the following scale with the reminder: "These weights are influenced by extra passengers, luggage, power and speed of the car and the construction as before mentioned, therefore in some instances it will be necessary to equip with larger tires. Refer to *Oversize Tires*."

Size	Rear, Lbs.	Front, Lbs.	Size	Rear, Lbs.	Front, Lbs.	Size	Rear, Lbs.	Front, Lbs.
28 × 3	350	450	34 × 4	650	800	33 × 5	950	1200
30 × 3	375	475	35 × 4	675	825	34 × 5	1000	1250
32 × 3	375	475	36 × 4	700	850	35 × 5	1050	1300
34 × 3	400	500	37 × 4	725	875	36 × 5	1100	1350
36 × 3	425	525	38 × 4	750	900	37 × 5	1150	1400
			40 × 4	800	950	38 × 5	1200	1450
29 × 3½	450	550	42 × 4	850	1000	39 × 5	1250	1500
30 × 3½	475	575				41 × 5	1350	1600
31 × 3½	500	600				43 × 5	1450	1700
32 × 3½	525	625	32 × 4½	800	1000			
33 × 3½	550	650	33 × 4½	850	1050	36 × 5½	1250	1500
34 × 3½	575	675	34 × 4½	900	1100	37 × 5½	1300	1550
36 × 3½	625	700	35 × 4½	950	1150	38 × 5½	1350	1600
			36 × 4½	1000	1200	40 × 5½	1450	1700
30 × 4	550	700	37 × 4½	1050	1250			
31 × 4	575	725	38 × 4½	1100	1300	37 × 6	1350	1600
32 × 4	600	750	40 × 4½	1200	1400	39 × 6	1450	1700
33 × 4	625	775	42 × 4½	1300	1500	41 × 6	1550	1800

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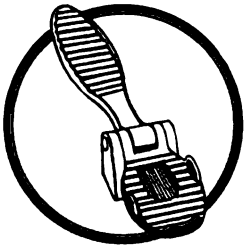
DE LUXE LINES ARE SUPERIOR



They Are Auto Necessities—Not Accessories

DeLuxe Sun and Rain Shields—all metal or glass, as desired. They beautify the car as well as giving driving comfort and safety. They are substantially built. They will not rattle. They are made for all cars—open or closed.

DeLuxe Rear Sight Mirrors are made of heavy plate—adjustable fittings—moisture proof backing—they will not blister.

DeLuxe Foot Throttles are of polished aluminum. They are adjustable to any position. They maintain a steady pressure on the gas accelerator. They cut down gas bills. A wonderful comfort on long drives.

Dealers—Handling the DeLuxe Lines is profitable business. Your customers will demand Sun and Rain Shields. Write us for prices.

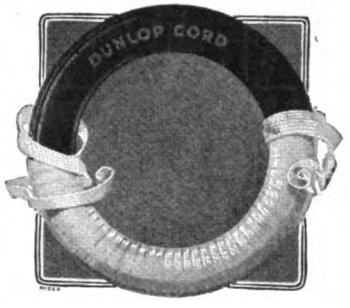
The DeLuxe Auto Manufacturing Co.
735 West Washington St. Los Angeles, Cal.

Beedee Distributing Service
613 West Pico St. Los Angeles, Cal.

PARTNERS IN PROGRESS

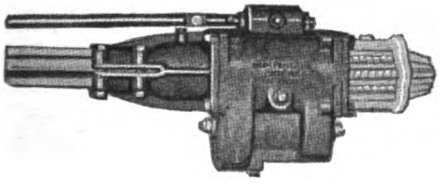
Dunlop's relations with Dunlop tire merchants are governed by the Dunlop policy of mutual interest. According to this policy, Dunlop regards its merchants not simply as middlemen, but as its partners in progress and success.

DUNLOP TIRE AND RUBBER CORP. OF AMERICA
Buffalo New York



DUNLOP

"MOORE" TRANSMISSION FOR FORDS



Four forward and two reverse speeds

The "MOORE" transmission is a compact set of gears of different ratio than Ford gears, to be installed on the Ford car or truck as permanent equipment without altering the original design or control, and which provide two additional forward speeds and one reverse.

The underdrive type doubles the power of the ford and enables it to travel rough or muddy roads or hills. The overdrive type increases the existing road speed on good roads or for fast city delivery service.

The Number One standard model is designed for all Ford cars and may be obtained in either type. The underdrive is especially desirable for use on closed Ford cars.

The Number Five truck model is a heavy duty commercial type, designed for the Ford one-ton worm drive truck, and may be secured in either type. The overdrive type of this model increases the road speed of the truck forty per cent on good roads.

For further information address the Sales Department.

Tractor Train Company
1344 Wall Street
LOS ANGELES, CALIF.

Tractor Train Company of Indiana
725 E. 10th Street
CONNERSVILLE, INDIANA

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Standardized Dimensions for Solid Tires

(S. A. E. Standard, according to 1918 Revision, but a number of changes were recommended in 1919 including 32 in. diameter and specifying tire widths.)

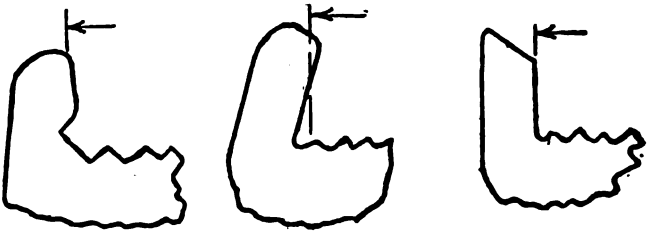
The standard nominal solid tire diameters are 34, 36 and 40 in.

Diameters and Wheel Circumferences

Nominal Outer Diameter of Tires		Actual Diameter Over Steel Band		Actual Circumference Over Steel Band	
in.	mm	in.	mm	in.	mm
34	860	28	711.2	87 3/32	2234.3
36	910	30	762.0	94¼	2393.9
40	1010	34	863.6	106 13/16	2713.1

The tolerances are shown separately on page 913.

Solid Tire Widths



The nominal width of solid tires in inches is measured inside the channel (see accompanying sketch), the tolerances being plus or minus 1/16 in.

Bolt Equipment for Side Flanges

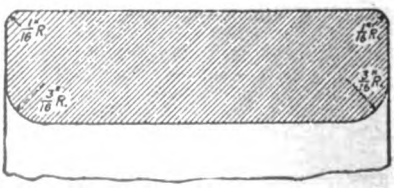
All bolts to be ½ in. (12.7 mm) diameter.

Nominal Outside Tire Diameter, In.	Diameter Bolt Hole Circle		Number of Bolts
	in.	mm	
34	26½	673.1	8, 12, or 24
36	28½	723.9	8, 12, or 24
40	32½	825.5	10, 15, or 30

Edges of Felloe Band

Bands to be rounded on two outside edges with radius not to exceed 1/16 in. (1.59 mm) and on both inside edges with a radius of 3/16 in. (4.76 mm).

(A change in this S. A. E. Practice of 1918 was recommended in 1919, providing 3/32 in. radius for all four edges, because steel mills will not roll shape first adopted).



In measuring circumference of band, if there is not an allowance on the tapeline itself, a correction amounting to three times the thickness of the tapeline should be made.

(Continued on following page)

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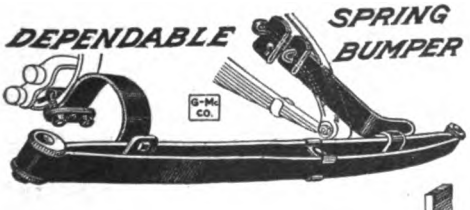
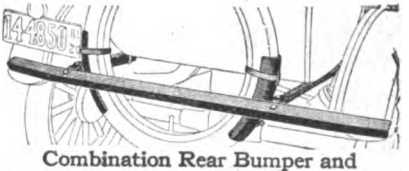
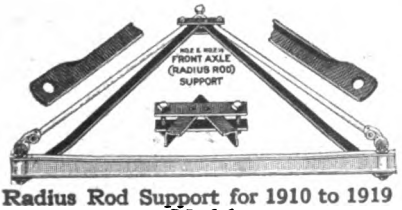
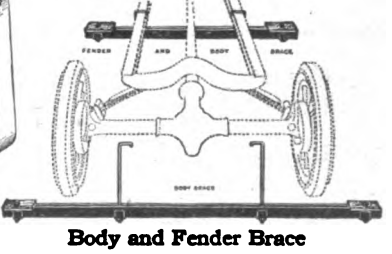




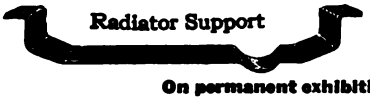
Combination Rear Bumper and Tire Carrier



Radius Rod Support for 1910 to 1919 Models

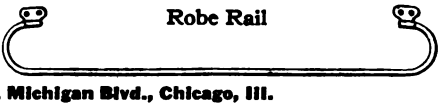


Body and Fender Brace



Radiator Support

Write for Catalogue and Prices



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Allowable Tolerance in Felloe Bands

	Plus in.	Plus mm	Minus in.	Minus mm
Band circumf. before application	1/32	0.85	1/16	1.69
Band circumf. after application	1/16	1.59	1/32	0.79
Width of band	1/32	0.79	1/32	0.79
Thickness of band	0.006	0.15	0.006	0.15
Radius of band after application	1/16	1.59	1/16	1.59

Approximate Wood Wheel Diameters for Various Sizes and Types of Rims

Size Tire	Clincher and Quick Detachable Rims, Inches	Firestone Demountable Rims, Inches	Fisk Bolted on Rims, Inches	Fisk Demountable Rims, Inches	Stanweld No. 60 Demountable Rims, Inches	Stanweld No. 40 Demountable Rims, Inches	Continental and One Piece Transversely Split Demountable Rims, Inches	Continental Demountable Rims, Metric Sizes: Size Tire	Continental Demountable Rims, Metric Sizes: Wheel Dia., Inches
30x3½	22 11/16	21 11/16	21 23/32	20 7/16	21 7/16	21 5/8	22	.....	.....
32x3½	24 11/16	23 11/16	23 23/32	22 7/16	23 7/16	23 5/8	24	810x 90	23 9/16
34x3½	26 11/16	25 11/16	25 23/32	24 7/16	25 7/16	25 5/8	26	870x 90	25 5/8
36x3½	28 11/16	27 11/16	27 23/32	26 7/16	27 7/16	27 5/8	28	910x 90	27 9/16
30x4	21 11/16	.....	.....	.....	20 13/32	20 5/8	21	.....	.....
32x4	23 11/16	22 11/16	22 13/32	21 ¼	22 13/32	22 5/8	23	.....	.....
34x4	25 11/16	24 11/16	24 13/32	23 ¼	24 13/32	24 5/8	25	875x105	25 5/8
36x4	27 11/16	26 11/16	26 13/32	25 ¼	26 13/32	26 5/8	27	915x105	27 9/16
32x4½	22 21/32	21 21/32	.....	.....	21 7/16	21 5/8	.....	820x120	21 13/16
34x4½	24 21/32	23 21/32	23 17/32	22 9/16	23 7/16	23 5/8	23 15/16	880x120	23 13/16
36x4½	26 21/32	25 21/32	25 17/32	24 9/16	25 7/16	25 5/8	25 15/16	920x120	25 9/16
34x5	23 21/32	22 21/32	22 17/32	21 9/16	22 13/32	22 5/8	22 15/16	.....	.....
36x5	25 21/32	24 21/32	24 13/32	23 9/16	24 13/32	24 5/8	24 15/16	.....	.....
38x5	.....	.....	26 13/32	25 9/16	.....	.....	.....	.....	.....
40x5	.....	.....	28 13/32	27 9/16	.....	.....	.....	.....	.....
36x5½	24 21/32	23 21/32	.....	.....	23 7/16	23 5/8	.....	935x135	24 3/16
37x5½	25 21/32	24 21/32	.....	.....	25 13/32	24 5/8	24 15/16	.....	.....
38x5½	.....	.....	25 9/16	23 ⅞	.....	.....	.....	.....	.....
40x5½	.....	.....	27 9/16	25 ⅞	.....	.....	.....	.....	.....
40x6	.....	.....	25 13/16	24 ½	.....	.....	.....	.....	.....

Metric Tires and Their American Equivalents

Metric Sizes	Approximate Size in Inches	Metric Sizes	Approximate Size in Inches
650 × 65	26 × 2½	870 × 90	34 × 3½
700 × 65	28 × 2½	910 × 90	36 × 3½
750 × 65	30 × 2½	960 × 90	38 × 3½
800 × 65	32 × 2½	1010 × 90	40 × 3½
830 × 65	33 × 2½	815 × 105	32 × 4
860 × 65	34 × 2½	875 × 105	34 × 4
700 × 85	28 × 3½	915 × 105	36 × 4
750 × 85	30 × 3½	820 × 120	32 × 4½–5
800 × 85	32 × 3½	850 × 120	33 × 4½–5
860 × 85	34 × 3½	880 × 120	34 × 4½–5
760 × 90	30 × 3½	920 × 120	36 × 4½–5
810 × 90	32 × 3½	1020 × 120	40 × 4½–5
840 × 90	32 × 3½	1080 × 120	42 × 4½–5

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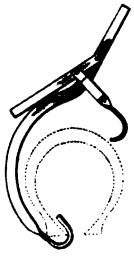

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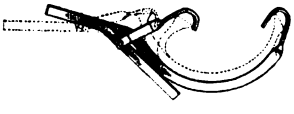

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Width and Depth of Piston Ring Grooves

A formula developed from approved practice with iron or steel cylinders and pistons has

$$G = \sqrt{\frac{0.01\ D^2}{8} + 0.005}$$

in which G is the depth of the piston ring groove and D the *nominal* diameter of the piston in inches. It is applicable for diameters from 1 to 7 inches and for concentric as well as eccentric rings. The width of rings and grooves can be standardized in five dimensions, as given in the appended table. As diameter H of groove bottom plus 2 G equals *actual* piston diameter, piston clearance $= \frac{D - (2G + H)}{2}$

Diameter (D)	Depth (G)	Max'm Diameter H of Groove Bottom (Minus Tolerance 0.005)	Minimum Groove Width (Plus Tolerance 0.001)	Maximum Ring Width (Minus Tolerance 0.001)
1	.0791	.840	.1250	.1247
1⅛	.0811	.961	"	"
1¼	.0834	1.081	"	"
1⅜	.0858	1.201	"	"
1½	.0884	1.321	"	"
1⅝	.0911	1.440	"	"
1¾	.0939	1.559	"	"
1⅞	.0969	1.678	"	"
2	.1000	1.796	"	"
2⅛	.1032	1.915	"	"
2¼	.1064	2.035	"	"
2⅜	.1098	2.151	"	"
2½	.1132	2.269	"	"
2⅝	.1167	2.387	.1875	.1872
2¾	.1202	2.505	"	"
2⅞	.1238	2.622	"	"
3	.1275	2.739	"	"
3⅛	.1312	2.857	"	"
3¼	.1349	2.974	"	"
3⅜	.1387	3.091	"	"
3½	.1425	3.208	"	"
3⅝	.1464	3.325	"	"
3¾	.1503	3.442	"	"
3⅞	.1542	3.559	"	"
4	.1581	3.676	"	"
4⅛	.1621	3.793	.2500	.2497
4¼	.1661	3.910	"	"
4⅜	.1701	4.027	"	"
4½	.1741	4.143	"	"
4⅝	.1782	4.260	"	"
4¾	.1822	4.377	"	"
4⅞	.1863	4.493	"	"
5	.1904	4.610	"	"
5⅛	.1945	4.726	.3125	.3120
5¼	.1986	4.843	"	"
5⅜	.2028	4.959	"	"
5½	.2069	5.076	"	"
5⅝	.2111	5.182	"	"
5¾	.2152	5.309	"	"
5⅞	.2194	5.425	"	"
6	.2236	5.541	"	"
6⅛	.2278	5.658	.3750	.3745
6¼	.2320	5.774	"	"
6⅜	.2362	5.890	"	"
6½	.2404	6.007	"	"
6⅝	.2447	6.123	"	"
6¾	.2489	6.239	"	"
6⅞	.2531	6.356	"	"
7	.2574	6.472	"	"

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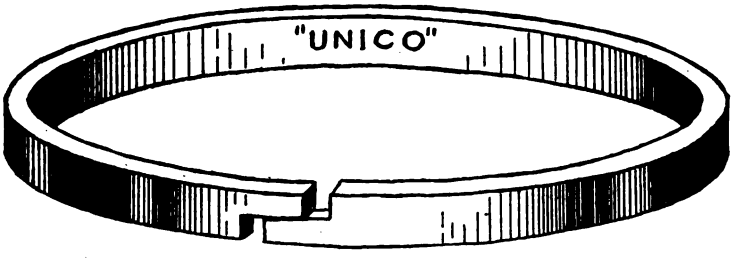

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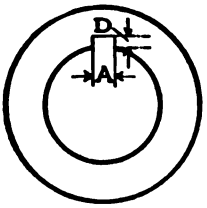

Data for Keyseats and Keyways

(American Machinist)

Standard Sizes of Keyseats

For straight keys, height of keyseat throughout = D.
For feather keys, $D = \frac{1}{2}A$.
Keyseat in shaft same depth as D in small end.
Standard taper = 1/8 inch per foot.

Size of Bore, Inches	"A." Width, Inches	"D." Smallest Height, Inches	Size of Bore, Inches	"A." Width, Inches	"D." Smallest Height, Inches
1 to 1 1/8	1/8	5/32	2 11/16 to 2 7/8	11/16	15/64
1 9/16 to 1 3/4	5/16	7/64	2 15/16 to 3 1/8	3/4	1/4
1 7/16 to 1 5/8	3/8	1/4	3 5/16 to 3 3/8	13/16	13/64
1 11/16 to 1 7/8	7/32	9/64	3 7/16 to 3 5/8	7/8	15/64
1 15/16 to 2 1/8	1/2	11/64	3 11/16 to 3 7/8	15/16	5/16
2 5/16 to 2 5/8	9/16	5/16	3 15/16 to 4 1/8	1	11/32
2 7/16 to 2 3/4	5/8	19/64	4 5/16 to 4 3/8	1 1/16	11/32

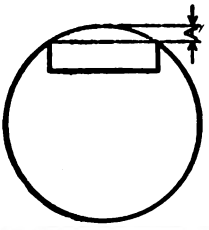

Table for Total Keyway Depth

This table will be found very useful in feeding the milling cutter down into a shaft. Having the size of the shaft to be keyyayed, look down the column marked "Size of Shaft" until you come to the number representing that size; then follow this line to the right until you reach the column representing the size keyway, and the decimal there represented is the distance "A," which added to the depth of the keyway will give the total depth from the point where the cutter first begins to cut.

Size of Shaft, Inches	Width of Keyway in Inches				
	1/4	5/16	3/8	7/16	1/2
	"A" in Inches				
1/2	0.0325				
9/16	0.0289				
5/8	0.0254	0.0413			
11/16	0.0236	0.0379			
3/4	0.0220	0.0346	0.0511		
13/16	0.0198	0.0314	0.0465		
7/8	0.0177	0.0283	0.0420	0.0583	
15/16	0.0164	0.0264	0.0392	0.0544	
1	0.0152	0.0246	0.0365	0.0506	0.0670
1 1/16	0.0143	0.0228	0.0342	0.0476	0.0625
1 1/8	0.0136	0.0210	0.0319	0.0446	0.0581
1 3/16	0.0131	0.0204	0.0304	0.0441	0.0551
1 1/4	0.0127	0.0198	0.0290	0.0397	0.0522
1 5/16	0.0123	0.0191	0.0279	0.0380	0.0499
1 3/8	0.0120	0.0185	0.0268	0.0364	0.0477
1 7/16	0.0114	0.0174	0.0254	0.0346	0.0453
1 1/2	0.0110	0.0164	0.0240	0.0328	0.0429
1 9/16	0.0107	0.0158	0.0231	0.0309	0.0412
1 5/8	0.0105	0.0153	0.0221	0.0291	0.0395
1 11/16	0.0102	0.0147	0.0214	0.0282	0.0383
1 3/4	0.0099	0.0142	0.0207	0.0274	0.0371
1 13/16	0.0095	0.0136	0.0198	0.0265	0.0355
1 7/8	0.0093	0.0130	0.0190	0.0257	0.0339
1 15/16	0.0090	0.0127	0.0184	0.0250	0.0328
2	0.0088	0.0124	0.0179	0.0243	0.0317
2 1/8	0.0078	0.0111	0.0168	0.0229	0.0299
2 1/4	0.0070	0.0107	0.0159	0.0216	0.0282
2 3/8	0.0066	0.0102	0.0152	0.0202	0.0267
2 1/2	0.0063	0.0098	0.0146	0.0194	0.0253
2 5/8	0.0060	0.0090	0.0139	0.0185	0.0242
2 3/4	0.0058	0.0088	0.0133	0.0176	0.0230
2 7/8	0.0056	0.0084	0.0126	0.0168	0.0220
3	0.0053	0.0081	0.0119	0.0161	0.0211

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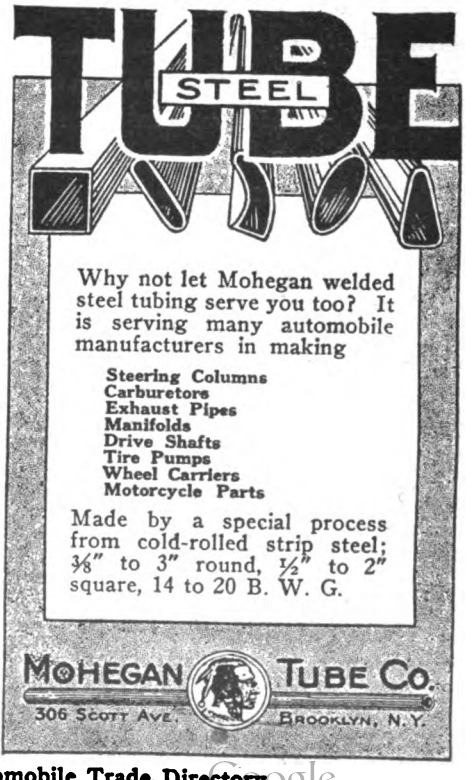

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Brakes and Clutches

Designs for brakes and clutches for motor vehicles have been developed empirically, and the development of brakes continues to be carried on without close reference to the mathematical formulas for retardation of a moving mass. The maintenance of constant conditions in the braking organs, especially a constant co-efficient of friction, and the suitable disposal of the heat generated by braking efforts, especially on long declivities, constitute the points on which difficulties are still mostly experienced. In European motor trucks, friction brakes are usually designed with metal to metal contact, this giving harsh action but improved (though not yet sufficient) heat convection. In American-built vehicles, the friction surfaces are usually metal and fabric, and the properties of the latter under all actual conditions of vehicle operation are the most important factor, assuming that conventional types and dimensions are employed.

Conclusive data on brake and clutch facings have not as yet been compiled or received the sanction of authorities.

Formulas for Cone Clutches (*C. A. Schaefer*)

H.P. = horse-power transmitted.

N = revolutions of crank-shaft per minute.

r = mean radius of friction cone, in inches.

r_1 = large radius of friction cone, in inches.

r_2 = small radius of friction cone, in inches.

R_1 = outside radius of leather band, in inches.

R_2 = inside radius of leather band, in inches.

v = velocity of a point at distance r from the center, in feet per minute.

F = tangential force acting at radius r, in pounds.

Pn = total normal pressure between cone surfaces, in pounds.

Ps = spring pressure, in pounds.

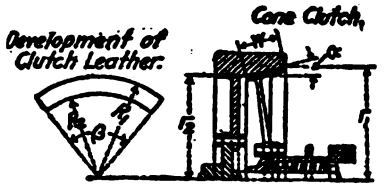
α = angle of clutch surface with axis of shaft = 7 to 13 degrees.

β = included angle of clutch leather, when developed, in degrees.

f = coefficient of friction = 0.20 to 0.25 for greasy leather on iron.

p = allowable pressure per square inch of leather band = 1 to 8 pounds.

W = width of clutch leather, in inches.



$$R_1 = \frac{r_1}{\sin \alpha} \qquad H.P. = \frac{Pn\, f\, r\, N}{63025}$$

$$R_2 = \frac{r_2}{\sin \alpha}$$

Engagement with some slip:

$$\beta = \sin \alpha \times 360 \qquad Pn = \frac{Ps}{\sin \alpha}$$

$$r = \frac{r_1 \times r_2}{2} \qquad Ps = \frac{H.P. \times 63025 \sin \alpha}{f\, r\, N}$$

$$v = \frac{2\pi r N}{12}$$

Engagement without slip:

$$F = \frac{H.P. \times 33000}{v} \qquad Pn = \frac{Ps}{\sin \alpha + f \cos \alpha}$$

$$W = \frac{Pn}{2\pi r p}$$

$$Ps = \frac{H.P. \times 63025\ (\sin \alpha + f \cos \alpha)}{f\, r\, N}$$

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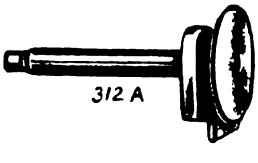

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Multiple Disc Clutches

While multiple disk clutches are designed and dimensioned mainly under the guidance of experience, acceleration formulas are used for checking the designs in each case.

A formula for clutch capacity which is employed for this purpose is the following:

$$H_p. = \frac{PfSRN}{63.025}$$

in which P is spring pressure, f co-efficient of friction, S number of friction surfaces, R mean radius of friction ring in inches and N maximum revolutions per minute of crank-shaft.

It is found that this formula agrees well with experience if the value for f is taken as 12 to 15 per cent for asbestos woven clutch facings.

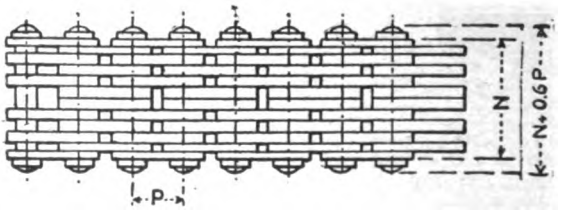
The torque which can be applied through a multiple disk clutch with V-grooves in the disks is determined by the formula:

$$T \text{ (in pounds-inches)} = rPf\,(N\text{-}1)C$$

in which r is the radius in inches of the V-groove, P the spring pressure, f equals 0.1 co-efficient of friction, N is the total number of disks and C a constant, which is 3.5 for automobile clutches and 2.5 for aeroplane clutches. The former have V-grooves of a 35-deg. angle, the latter of 45-deg. angle.

Widths of Silent Chains

According to recommended practice, the standard width of a silent chain is the width over all tension members and the maximum width of chain over rivet heads is this nominal width plus six-tenths the pitch. The table shows the extreme widths for the various pitches. Width of sprocket for the same nominal width of chain will vary according to the method of guiding the chain.



Chain Width No.	(N) Width Over Tension Members	Extreme Width of Chain (N+0.6P)							
		⅜-In. Pitch	½-In. Pitch	⅝-In. Pitch	¾-In. Pitch	1-In. Pitch	1¼-In. Pitch	1½-In. Pitch	2-In. Pitch
4	½	0.725	0.800	0.875	.....	.....	.....	.....	.....
6	¾	0.975	1.050	1.125	1.200	.....	.....	.....	.....
8	1	1.225	1.300	1.375	1.450	1.600	.....	.....	.....
10	1¼	1.475	1.550	1.625	1.700	1.850	2.000	.....	.....
12	1½	1.725	1.800	1.875	1.950	2.100	2.250	2.400	.....
14	1¾	1.975	2.050	2.125	2.200	2.350	2.500	2.650	.....
16	2	2.225	2.300	2.375	2.450	2.600	2.750	2.900	3.200
18	2¼	2.475	2.550	2.625	2.700	2.850	3.000	3.150	3.450
20	2½	2.725	2.800	2.875	2.950	3.100	3.250	3.400	3.700
24	3	3.225	3.300	3.375	3.450	3.600	3.750	3.900	4.200
28	3½	.....	3.800	3.875	3.950	4.100	4.250	4.400	4.700
32	4	.....	4.300	4.375	4.450	4.600	4.750	4.900	5.200
40	5	.....	.....	5.375	5.450	5.600	5.750	5.900	6.200
48	6	.....	.....	6.375	6.450	6.600	6.750	6.900	7.200

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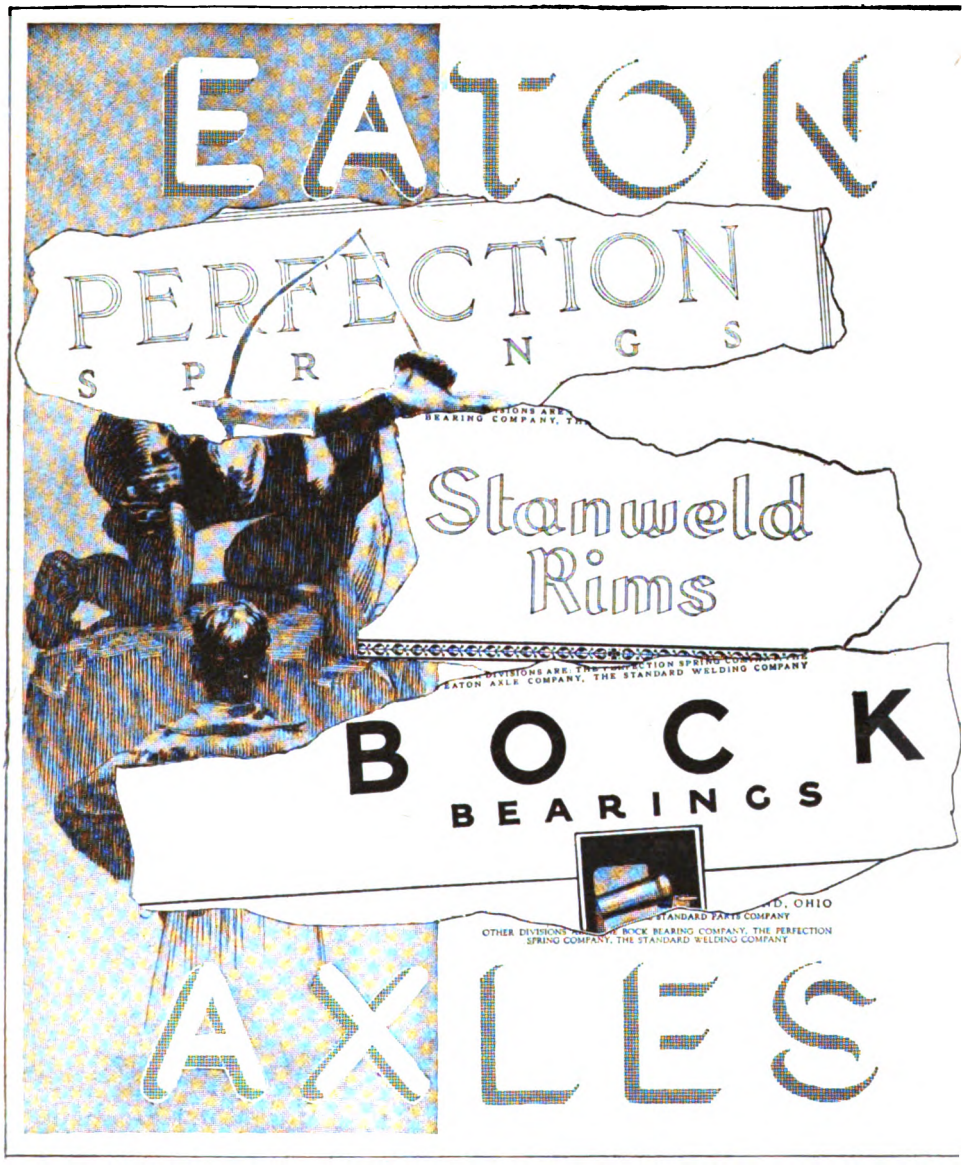

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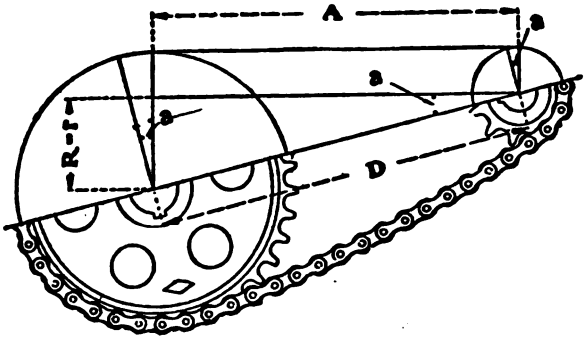
Length of Sprocket Chains



D = Distance between centers.

A = Distance between limits of contact.

R = Pitch radius of large sprocket.

r = Pitch radius of small sprocket.

N = Number of teeth on large sprocket.

n = Number of teeth on small sprocket.

P = Pitch of chain and sprockets. (Distance from center to center of chain pins.)

$180° + 2a$ = Angle of contact—large sprocket.

$180° - 2a$ = Angle of contact—small sprocket.

$$\text{Sin } a = \frac{R - r}{D}$$

$$A = D \cos a$$

Length of chain = L

$$(1) \qquad L = \frac{(90 + a)\,NP}{180} + \frac{(90 - a)\,nP}{180} + 2A$$

With only R, r and D known, the length of a sprocket chain can be figured with sufficient accuracy (very slightly short) from the formula.

$$(2) \qquad L = (R + r)\,\pi + 2\sqrt{D^2 - (R - r)^2} + \frac{2\,(R - r)^2}{D}$$

which is simple when figures are inserted.

For example, with $R = 6$, $r = 2$ and $D = 20$,

$$L = 8 \times 3.1416 + 2\sqrt{400 - 16} + \frac{32}{20} = 25.133 + 2 \times 19.60 + 1.60 = 65.93.$$

The figure obtained is rounded upward to allow for slack and to correspond to a multiple of chain pitch.

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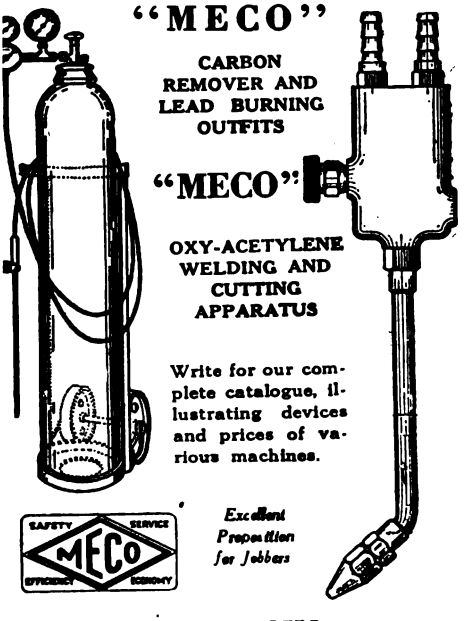

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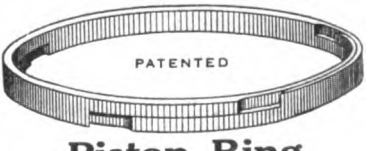

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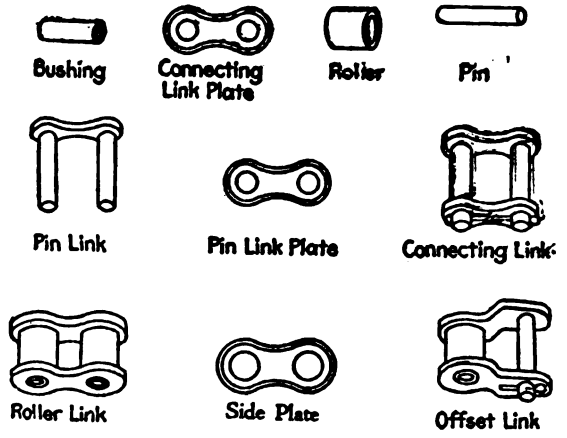
Nomenclature and Dimensions of Roller-Chains

Recommended by S. A. E. and A. S. M.



Trade No.	Pitch	Distance Between Inside Plates	Roller Diameter
Mfr's Std'd 2	½	¼	.306
Mfr's Std'd 2½	⅝	⅜	.400
Mfr's Std'd 3	¾	½	15/16
Mfr's Std'd 4	1	⅝	⅝
Mfr's Std'd 5	1¼	¾	⅞
Mfr's Std'd 6	1½	1	⅞
Mfr's Std'd 7	1¾	1	1
Mfr's Std'd 8	2	1¼	1⅛
Mfr's Std'd 10	2½	1½	1 5/16

Dimensions are in inches.

Marketed Production of Crude Petroleum for Years 1910-1916 in Barrels of 42 Gallons

	Roumania	U. S. A.	Russia	Dutch E. Ind.	Mexico	Total
1910.....	9,723,806	209,557,248	70,336,574	11,030,620	3,332,807	327,615,603
1911.....	11,107,450	220,449,391	66,183,691	12,172,949	14,051,643	345,685,081
1912.....	12,976,232	222,935,044	68,019,208	10,845,624	16,558,215	352,484,591
1913.....	13,554,768	248,446,230	62,834,356	11,966,857	25,902,439	384,667,550
1914.....	12,826,579	265,762,535	67,020,522	12,705,208	21,188,427	399,264,168
1915.....	13,229,913	281,104,104	68,548,062	12,386,808	32,910,508	429,119,688
1916.....	.....	292,300,000	72,360,000	.....	.....	.....

Italy, Canada, Galicia, Japan, Germany, India, Peru, Trinidad, Egypt are the principal other countries producing crude petroleum, the amounts being included in the column of Totals above.

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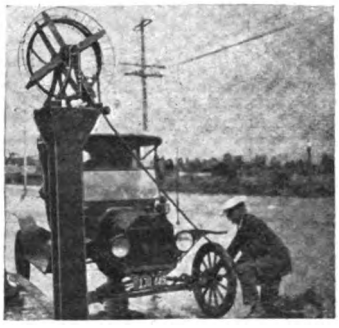

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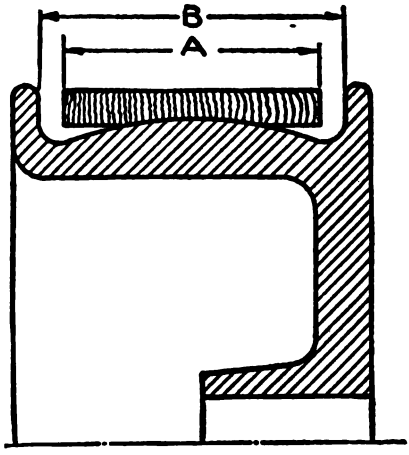
Fan Belts and Pulleys

S. A. E. Standard Widths



Nominal Belt Width	¾	1	1¼	1½
Belt width, A	23/32 to 25/32	31/32 to 1 1/32	1 7/32 to 1 9/32	1 15/32 to 1 17/32
Puiley width, B	0.870 to 0.880	1.120 to 1.130	1.370 to 1.380	1.680 to 1.690

All dimensions in inches.

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Tubing can be furnished in copper, and the commercial alloys of copper and zinc, such as high brass, bronze, phosphor bronze, and tobin bronze.

Composition.—As specified to meet the requirements of use.

Temper.—As specified in the order; may be hard, half hard or annealed. If annealed, the tubing may be soft, or light annealed.

Size variation.—On inside and outside diameter and the thickness of the walls, as follows:

Outside and Inside Dimensions

Up to ½ in. inclusive	0.002	in. over or under
Over ½ in. to and including ¾ in.	0.0025	in. over or under
Over ¾ in. to and including 1 in.	0.003	in. over or under
Over 1 in. to and including 1¼ in.	0.0035	in. over or under
Over 1¼ in. to and including 1½ in.	0.004	in. over or under
Over 1½ in. to and including 1¾ in.	0.0045	in. over or under
Over 1¾ in. to and including 2 in.	0.005	in. over or under
Over 2 in.	¼ of 1 per cent.	over or under

No combination of variations on the same tube shall make the thickness of the wall vary from the nominal by more than the following amounts:

Thickness of Wall

Up to and including 1/64 in.	0.001	in. over or under
Over 1/64 in. to and including 1/32 in.	0.002	in. over or under
Over 1/32 in. to and including 1/16 in.	0.003	in. over or under
Over 1/16 in. to and including ⅛ in.	0.005	in. over or under
Over ⅛ in. to and including ¼ in.	0.008	in. over or under
Over ¼ in. to and including 5/16 in.	0.0125	in. over or under
Over 5/16 in. to and including ⅜ in.	0.015	in. over or under

Special limits.—On all stock where the above commercial variations are not permissible limits shall be specified in the order.

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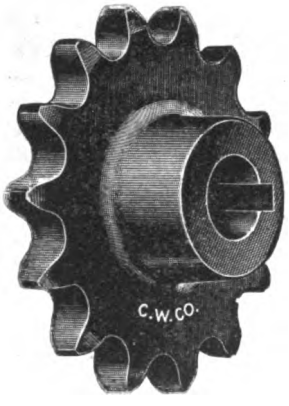

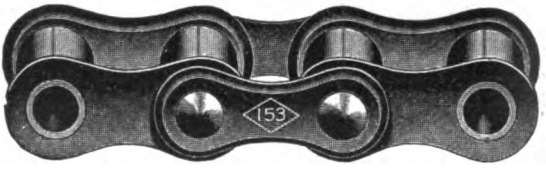

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(S. A. E. Standard)

AND THEIR TORQUE CAPACITIES IN POUNDS-FEET, AS FIGURED BY C. W. SPICER

Out. Dia., In.	Tube Thickness — Birmingham Wire Gage and Fractions in Upper Line; Decimals of an Inch Lower Line													Solid Shaft
	20	18	16	13	11	10	5/32	3/16	1/4	5/16	3/8	1/2	5/8	
	.035	.049	.065	.095	120	134	.156	.188	.250	.313	.375	.500	.625	
1/2	9.28	11.9	14.3	17.5										20.7
5/8	15.2	19.7	24.1	30.5										40.3
3/4	22.3	29.3	36.7	47.3	54.2	57.1	60.8	64.6						69.7
7/8	30.9	41.6	52.1	68.4	79.3	84.3	90.9	97.9						110.0
1	41.3	55.6	70.2	93.5	109.0	117.0	127.0	139.0	154.0					165.0
1 1/8	52.5	71.2	90.4	122.0	144.0	154.5	169.6	187.5	211.0					235.0
1 1/4	66.3	89.2	114.0	154.8	184.0	198.0	219.0	244.0	279.0	300.0	312.0			323.0
1 3/8	79.9	108.6	139.5	191.2	228.0	247.0	273.0	309.0	356.0	388.0	408.0			429.0
1 1/2	96.2	131.0	168.5	232.0	280.0	301.0	336.0	378.0	444.0	489.0	518.0	546.0		558.0
1 3/4			234.0	325.0	391.0	427.0	479.0	545.0	650.0	729.0	785.0	850.0		885.0
2			312.0	435.0	525.0	574.0	645.0	740.0	897.0	1020	1112	1,230	1,286	1,320
2 1/4			393.0	554.0	678.0	743.0	838.0	970.0	1181	1356	1497	1,687	1,792	1,880
2 1/2			492.0	689.0	885.0	938.0	1062	1226	1516	1751	1948	2,228	2,398	2,580
2 3/4			608.0	853.0	1044	1151	1312	1515	1885	2195	2458	2,853	3,106	3,435
3			722.0	1022	1257	1383	1580	1831	2296	2690	3030	3,554	3,918	4,460
3 1/4			847.5	1206	1488	1630	1877	2180	2740	3250	3659	4,336	4,820	5,680
3 1/2			937.0	1406	1734	1910	2202	2577	3233	3842	4360	5,200	5,855	7,085

Sizes to the left of the left-hand zigzag line are difficult to straighten except with special equipment and are considered too flimsy for automobile propeller-shafts. Sizes to the right of the right-hand zigzag line are more than half as heavy as solid shafts of the same outside diameters.

Steel Bands and Strips

Steel bands, band edged flats and hoops or strips are rolled in the following widths and gages (all measurements in inches):

1/2	increasing	by	1/16ths	to	
1 1/16	"	"	"	"	
2 1/16	"	"	"	"	
3 1/16	"	"	"	"	
4 1/16	"	"	"	"	
4 9/16	"	"	"	"	
4 13/16	"	"	"	"	
5 1/8	"	"	"	"	

Width	Thickness					
3/8	No. 4	= .238	to	No.	18	= .049
7/16	" 4	= .238	"	"	19	= .042
1	" 4	= .238	"	"	23	= .025
2	" 4	= .238	"	"	22	= .028
3	" 1	= .300	"	"	21	= .032
4	" 1	= .300	"	"	20	= .035
4 1/2	" 1	= .300	"	"	19	= .042
4 3/4	" 00	= .380	"	"	18	= .049
5 1/16	" 00	= .380	"	"	17	= .058
6 3/4	" 00	= .380	"	"	16	= .065
7	" 1	= .300	"	"	14	= .083
7 1/8	" 1	= .300	"	"	14	= .083
7 5/8	" 1	= .300	"	"	14	= .083
7 3/4	" 1	= .300	"	"	14	= .083
7 7/8	" 1	= .300	"	"	14	= .083
8	" 1	= .300	"	"	14	= .083
8 1/8	" 1	= .300	"	"	14	= .083
8 1/2	" 1	= .300	"	"	14	= .083
8 5/8	" 1	= .300	"	"	14	= .083
9 5/8	" 1	= .300	"	"	12	= .109

While the above sizes are generally considered standard, the majority of the mills roll strips as wide as 20 inches in the heavier gages.

Decimal Specifications Preferred

The gage used by the manufacturers of bands, hoops and strips is the Birmingham Wire Gage but it is recommended by the S. A. E. when writing specifications for bands, hoops and strips that the thickness desired be expressed in thousandths of an inch.

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Size Book and Directory for 1920-1921

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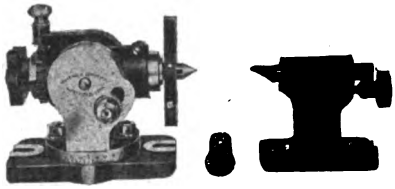

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HARTFORD, CONN.
Small Tool and Gauge Makers

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List of Nine Different Standard Wire Gauges Used In the United States.

DECIMAL EQUIVALENTS (Inches)

No. of Gauge	American or Brown & Sharpe Iron Wire	Birmingham or Stubbs Iron Wire	Washburn & Moen Iron Wire	Imperial Wire Gauge	U. S. Standard for Plate (Iron & Steel)	Stubbs Steel Wire	Twist Drill and Steel Wire	Washburn & Moen Music Wire	Wood and Machine Screws	No. of Gauge	Fractional Parts of an Inch	Decimal Equiv of Sixty-fourths etc.
8–0	.....	.....	.....	.....	.....	.....	This gauge	.0083	....	8–0	1/64	.01563
7–0	.....	.....	.....	.....	.500	.....	from one to	.0087	....	7–0	1/32	.03125
6–0	.....	.....	.....	.464	.469	.....	three thous-	.0095	....	6–0	1/16	.625
5–0	.....	.....	.....	.432	.438	.....	andths larger	.010	....	5–0	5/64	.07813
4–0	.460	.454	.394	.400	.406	.....	than same Nos.	.011	....	4–0	3/32	.09375
3–0	.410	.425	.363	.372	.375	.....	of Stubbs steel	.012	.030	3–0	7/64	.10938
2–0	.365	.380	.331	.348	.344	.....	wire gauge	.013	.045	2–0	1/8	.125
0	.325	.340	.307	.334	.313	.....		.014	.058	0	9/64	.14063
1	.289	.300	.283	.300	.281	.277	.228	.016	.071	1	5/32	.15625
2	.258	.284	.263	.276	.266	.219	.221	.017	.084	2	11/64	.17188
3	.229	.259	.244	.252	.250	.212	.213	.018	.097	3	3/16	.1875
4	.204	.238	.225	.232	.234	.207	.209	.019	.110	4	13/64	.20313
5	.182	.220	.207	.212	.219	.204	.206	.020	.124	5	7/32	.21875
6	.162	.203	.192	.192	.203	.201	.204	.022	.137	6	15/64	.23438
7	.144	.180	.177	.176	.188	.199	.201	.023	.150	7	1/4	.25
8	.128	.165	.162	.160	.172	.197	.199	.024	.163	8	17/64	.26563
9	.114	.148	.148	.144	.156	.194	.196	.026	.176	9	9/32	.28125
10	.102	.134	.135	.128	.141	.191	.194	.027	.189	10	19/64	.29688
11	.091	.120	.121	.116	.125	.188	.191	.028	.203	11	5/16	.3125
12	.081	.109	.106	.104	.109	.185	.189	.030	.216	12	21/64	.32813
13	.072	.095	.092	.092	.094	.182	.185	.031	.229	13	11/32	.34375
14	.064	.083	.080	.080	.078	.180	.182	.033	.242	14	23/64	.35938
15	.057	.072	.072	.072	.070	.178	.180	.035	.255	15	3/8	.375
16	.051	.065	.063	.064	.063	.175	.177	.036	.268	16	25/64	.39063
17	.045	.058	.054	.056	.056	.172	.173	.038	.282	17	13/32	.40625
18	.040	.049	.048	.048	.050	.168	.170	.040	.295	18	27/64	.42188
19	.036	.042	.041	.040	.044	.164	.166	.041	.308	19	7/16	.4375
20	.032	.035	.035	.036	.038	.161	.161	.043	.321	20	29/64	.45313
21	.028	.032	.032	.032	.034	.157	.159	.046	.334	21	15/32	.46875
22	.025	.028	.029	.028	.031	.155	.157	.048	.347	22	31/64	.48438
23	.023	.025	.026	.024	.028	.153	.154	.051	.360	23	1/2	.5
24	.020	.022	.023	.022	.025	.151	.152	.055	.374	24	33/64	.51563
25	.018	.020	.020	.020	.022	.148	.150	.059	.387	25	17/32	.53125
26	.016	.018	.018	.018	.019	.146	.147	.063	.400	26	35/64	.54688
27	.0141	.016	.0173	.0164	.0171	.143	.144	.066	.413	27	9/16	.5625
28	.0126	.014	.0162	.0149	.0156	.139	.141	.072	.426	28	37/64	.57813
29	.0112	.013	.015	.0136	.014	.134	.136	.076	.439	29	19/32	.59375
30	.010	.012	.014	.0124	.0125	.127	.129	.080	.453	30	39/64	.60938
31	.0089	.010	.0132	.0116	.0109	.120	.120	....	.466	31	5/8	.625
32	.0079	.009	.0128	.0108	.0101	.115	.116	....	.479	32	41/64	.64063
33	.007	.008	.0118	.010	.0093	.112	.113	....	.492	33	21/32	.65625
34	.0063	.007	.0104	.0092	.0085	.110	.111	....	.505	34	43/64	.67188
35	.0056	.005	.0095	.0084	.0078	.108	.110	....	.518	35	11/16	.6875
36	.005	.004	.009	.0076	.007	.106	.1065	....	.532	36	45/64	.70313
37	.0044	.....	.....	.0068	.0066	.103	.104	....	.545	37	23/32	.71875
38	.0039	.....	.....	.006	.0062	.101	.1015	....	.558	38	47/64	.73438
39	.0035	.....	.....	.0052	.....	.099	.0995	....	.571	39	3/4	.75
40	.0031	.....	.....	.0048	.....	.097	.098	....	.584	40	49/64	.76563
41	.....	.....	.....	.....	.....	.095	.096	....	.597	41	25/32	.78125
42	.....	.....	.....	.....	.....	.092	.094	....	.611	42	51/64	.79688
43	.....	.....	.....	.....	.....	.088	.089	....	.624	43	13/16	.8125
44	.....	.....	.....	.....	.....	.085	.086	....	.637	44	53/64	.82813
45	.....	.....	.....	.....	.....	.081	.082	....	.650	45	27/32	.84375
46	.....	.....	.....	.....	.....	.079	.081	....	.663	46	55/64	.85938
47	.....	.....	.....	.....	.....	.077	.079	....	.676	47	7/8	.875
48	.....	.....	.....	.....	.....	.075	.076	....	.690	48	57/64	.89063
49	.....	.....	.....	.....	.....	.072	.073	....	.703	49	29/32	.90625
50	.....	.....	.....	.....	.....	.069	.070	....	.716	50	59/64	.92188

Letter Sizes Stubbs Steel Wire

A	.234	I	.272	R	.339
B	.238	J	.277	S	.348
C	.242	K	.281	T	.358
D	.246	L	.290	U	.368
E	.250	M	.295	V	.377
F	.257	N	.302	W	.386
G	.261	O	.316	X	.397
H	.266	P	.323	Y	.404
		Q	.332	Z	.413

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TUTHILL SPRING COMPANY
Established 1880

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TITANI
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Sizes of Numbers of the United States Standard Gauge for Sheet and Plate Iron and Steel

An Act Establishing a Standard Gauge for Sheet and Plate Iron and Steel

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled: That for the purpose of securing uniformity the following is established as the only gauge for sheet and plate iron and steel in the United States of America, namely:

Number of Gauge	Approximate Thickness in Fractions of an Inch	Approximate Thickness in Decimal Parts of an Inch	Weight per Square Foot in Ounces Avoirdupois	Weight per Square Foot in Pounds Avoirdupois
0000000	1/2	.5	320	20.00
000000	15/32	.46875	300	18.75
00000	7/16	.4375	280	17.50
0000	13/32	.40625	260	16.25
000	3/8	.375	240	15.00
00	11/32	.34375	220	13.75
0	5/16	.3125	200	12.50
1	9/32	.28125	180	11.25
2	17/64	.265625	170	10.625
3	1/4	.25	160	10.00
4	15/64	.234375	150	9.375
5	7/32	.21875	140	8.75
6	13/64	.203125	130	8.125
7	3/16	.1875	120	7.5
8	11/64	.171875	110	6.875
9	5/32	.15625	100	6.25
10	9/64	.140625	90	5.625
11	1/8	.125	80	5.00
12	7/64	.109375	70	4.375
13	3/32	.09375	60	3.75
14	5/64	.078125	50	3.125
15	9/128	.0703125	45	2.8125
16	1/16	.0625	40	2.5
17	9/160	.05625	36	2.25
18	1/20	.05	32	2.
19	7/160	.04375	28	1.75
20	3/80	.0375	24	1.50
21	11/320	.034375	22	1.375
22	1/32	.03125	20	1.25
23	9/320	.028125	18	1.25
24	1/40	.025	16	1.
25	7/320	.021875	14	.875
26	3/160	.01875	12	.75
27	11/640	.0171875	11	.6875
28	1/64	.015625	10	.625
29	9/640	.0140625	9	.5625
30	1/80	.0125	8	.5
31	7/640	.0109375	7	.43 7/16
32	13/1280	.01015625	6½	.40625
33	3/320	.009375	6	.375
34	11/1280	.00859375	5½	.34375
35	5/640	.0078125	5	.3125
36	9/1280	.00703125	4½	.28125
37	17/2560	.006640625	4¼	.265625
38	1/160	.00625	4	.25

And on and after July first, eighteen hundred and ninety-three, the same and no other shall be used in determining duties and taxes levied by the United States of America on sheet and plate iron and steel. But this act shall not be construed to increase duties upon any articles which may be imported.

Sec. 3.—That in the practical use and application of the standard gauge hereby established a variation of two and one-half per cent. either way may be allowed.

Approved March 3, 1893.

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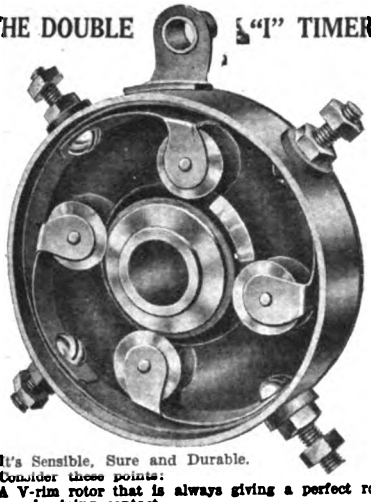
THE DOUBLE "I" TIMER



It's Sensible, Sure and Durable.

Consider these points:

A V-rim rotor that is always giving a perfect rolling and wiping contact.

Brass to brass there is nothing better for contacts.

Wear that is negligible; that is only a lapping of contact surfaces to a smooth finish.

No Roller troubles. Rollers roll on a small center rather than the outside rim at a speed of 3-5 that of the ordinary timer.

Slower contacting speed that means a better contact.

No lubricating troubles. Just fill with grease. The V-rim rotor cuts and wipes for a perfect spark.

List $3.00

IMPROVED IGNITION, INC.

200 Cannon St. Bridgeport, Conn.

"SEES ALL"

MOTOR EYE

"TELLS ALL"

THE MOTOR EYE takes the temperature directly from the water in the radiator—you do not have to wait for temperature indication until steam is up, as the slightest change in the temperature of the water is shown instantly in the thermometer of the MOTOR EYE.

The stem attached to the bottom of the MOTOR EYE extends down into the water, THAT houses and protects the delicate thermometer from injury.

The Motor Eye can be furnished with special design name plates on back for all makes of cars, trucks and tractors.

Manufactured by

Metalware Corporation

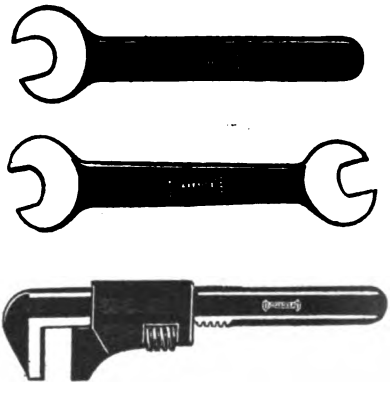
228 W. Superior Street, Chicago, Ill.

An Important Message To All Who *Use* or *Sell* Wrenches

This is a message to everyone in the automotive trade, who either sells wrenches or has occasion to use them in their daily work.

A short time ago one of the largest manufacturing companies in the world was in the market for drop forge wrenches—quality and price was to determine the line of wrenches they would purchase.

The test was a severe one. Nuts were threaded on the bolts and were set up until either the bolt or the wrench was broken.



The final result of this test proved so satisfactory with Lakeside Wrenches, that they gave us their contract.

Not even a book of a thousand pages could speak more eloquently for wrenches than the above test.

In a word, the result of the above test should conclusively prove to you that when you are in the market for drop forge wrenches and our stock wrenches for resale to your customers, that your final choice should be — Lakeside Wrenches.

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Write us today.

Lakeside Forge Co.

Erie, Pennsylvania

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Weight in Pounds of a Linear Foot of Round, Square and Octagon Steel

Size in Inches	Round	Octagon	Square	Size in Inches	Round	Octagon	Square
1/16	.010	.011	.013	2 1/2	16.79	17.71	21.37
1/8	.042	.044	.053	2 5/8	18.51	19.52	23.56
3/16	.094	.099	.120	2 3/4	20.31	21.42	25.86
1/4	.168	.177	.214	2 7/8	22.20	23.41	28.27
5/16	.262	.277	.334	3	24.17	25.50	30.78
3/8	.378	.398	.491	3 1/8	26.23	27.66	33.40
7/16	.514	.542	.655	3 1/4	28.37	29.92	36.12
1/2	.671	.708	.855	3 3/8	30.59	32.27	38.95
9/16	.850	.896	1.082	3 1/2	32.90	34.70	41.89
5/8	1.049	1.107	1.336	3 5/8	35.29	37.23	44.94
11/16	1.270	1.339	1.616	3 3/4	37.77	39.84	48.09
3/4	1.511	1.594	1.924	3 7/8	40.33	42.54	51.35
13/16	1.773	1.870	2.258	4	42.97	45.33	54.72
7/8	2.056	2.169	2.618	4 1/4	48.51	51.17	61.77
15/16	2.361	2.490	3.006	4 1/2	54.39	57.37	69.25
.	2.686	2.833	3.420	4 3/4	60.60	63.92	77.16
1 1/8	3.399	3.585	4.328	5	67.15	70.83	85.50
1 1/4	4.197	4.427	5.344	5 1/4	74.03	78.08	94.26
1 3/8	5.078	5.356	6.466	5 1/2	81.25	85.70	103.45
1 1/2	6.044	6.374	7.695	5 3/4	88.80	93.67	113.07
1 5/8	7.093	7.481	9.031	6	96.69	101.99	123.12
1 3/4	8.226	8.674	10.474	7	131.61	138.82	167.58
1 7/8	9.443	9.960	12.023	8	171.90	181.32	218.88
2	10.741	11.332	13.680	9	217.57	229.48	277.02
2 1/8	12.129	12.793	15.443	10	268.60	283.31	342.00
2 1/4	13.598	14.343	17.314	11	325.01	342.80	413.82
2 3/8	15.151	15.981	19.291	12	386.79	407.97	492.48

Proportionate Weight of Castings to Weight of Wood Patterns

A Pattern Weighing One Pound, Made of (Less Weight of Core Prints)	Cast Iron	Brass	Copper	Bronze	Bell Metal	Zinc
Pine or Fir	16	15.8	16.7	16.3	17.1	13.5
Oak	9	10.1	10.4	10.3	10.9	8.6
Beech	9.7	10.9	11.4	11.3	11.9	9.1
Linden	13.4	15.1	16.7	15.5	16.3	12.9
Pear	10.2	11.5	11.9	11.8	12.4	9.8
Birch	10.6	11.9	12.3	12.2	12.9	10.2
Alder	12.8	14.3	14.9	14.7	15.5	12.2
Mahogany	11.7	13.2	13.7	13.5	14.2	11.2
Brass	0.85	0.95	0.99	0.98	1.0	0.81

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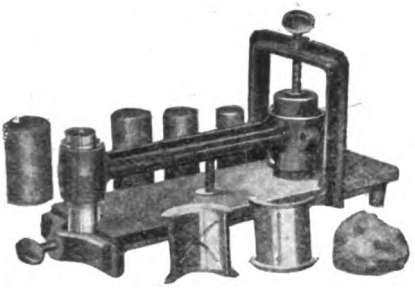
A BABBITTER FOR ANY SIZE CONNECTING ROD



This N-A size Babbitter will re-babbitt any size auto engine connecting rod up to 12½ inches in length from center to center.

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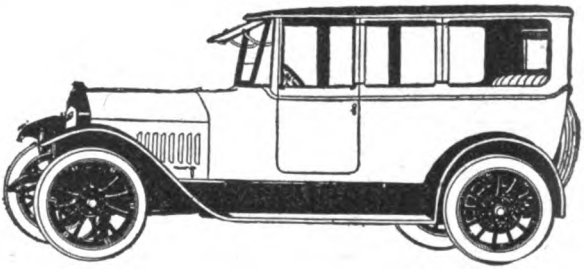

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WEIGHT OF STEEL PER LINEAR FOOT

FLAT SIZES

	½	⅝	¾	⅞	1	1⅛	1¼	1⅜	1½	1¾	2	2¼	2½	2¾	3	3½	4	5	6	7
⅛	.213	.266	.320	.372	.426	.479	.530	.585	.640	.745	.850	.955	1.07	1.18	1.28	1.49	1.70	2.13	2.56	2.98
3/16	.319	.399	.480	.558	.639	.718	.790	.878	.960	1.12	1.28	1.43	1.60	1.76	1.92	2.24	2.55	3.20	3.83	4.47
¼	.425	.533	.640	.743	.852	.958	1.06	1.17	1.28	1.49	1.70	1.91	2.13	2.34	2.56	2.98	3.40	4.26	5.11	5.96
5/16	.531	.665	.800	.929	1.06	1.20	1.33	1.46	1.60	1.86	2.13	2.39	2.66	2.92	3.19	3.72	4.25	5.32	6.38	7.44
⅜	.638	.798	.960	1.12	1.28	1.43	1.59	1.75	1.91	2.23	2.55	2.87	3.20	3.51	3.83	4.46	5.10	6.40	7.66	8.92
7/16	.744	.931	1.12	1.30	1.49	1.67	1.86	2.05	2.23	2.60	2.98	3.35	3.72	4.09	4.46	5.21	5.95	7.44	8.92	10.40
½	.....	1.07	1.28	1.49	1.70	1.91	2.13	2.34	2.55	2.98	3.40	3.83	4.26	4.68	5.10	5.96	6.80	8.52	10.20	11.96
9/16	.....	1.20	1.44	1.67	1.91	2.15	2.39	2.63	2.87	3.35	3.83	4.30	4.78	5.26	5.74	6.69	7.65	9.56	11.50	13.40
⅝	.....	.....	1.60	1.86	2.12	2.39	2.66	2.92	3.19	3.72	4.26	4.79	5.32	5.86	6.39	7.44	8.52	10.64	12.78	14.90
11/16	.....	.....	1.76	2.04	2.34	2.63	2.92	3.22	3.51	4.09	4.68	5.26	5.84	6.43	7.01	8.18	9.35	11.70	14.00	16.40
¾	.....	.....	.....	2.23	2.55	2.86	3.19	3.50	3.83	4.46	5.10	5.74	6.40	7.02	7.65	8.92	10.20	12.80	15.30	17.90
13/16	.....	.....	.....	2.41	2.76	3.11	3.45	3.80	4.14	4.83	5.53	6.22	6.91	7.60	8.29	9.67	11.10	13.80	16.60	19.30
⅞	.....	.....	.....	.....	2.98	3.34	3.72	4.09	4.46	5.21	5.96	6.70	7.46	8.19	8.94	10.42	11.92	14.87	17.88	20.80
15/16	.....	.....	.....	.....	3.19	3.59	3.98	4.38	4.78	5.58	6.38	7.17	7.97	8.77	9.56	11.20	12.80	15.90	19.10	22.40
1	.....	.....	.....	.....	.....	3.82	4.25	4.68	5.10	5.96	6.80	7.66	8.52	9.36	10.20	11.92	13.60	17.04	20.40	23.80
1⅛	.....	.....	.....	.....	.....	.....	4.78	5.27	5.74	6.71	7.65	8.61	9.59	10.54	11.48	13.41	15.30	19.17	22.95	26.80
1¼	.....	.....	.....	.....	.....	.....	.....	5.85	6.38	7.45	8.50	9.57	10.65	11.71	12.76	14.90	17.00	21.30	25.61	29.76
1½	.....	.....	.....	.....	.....	.....	.....	7.02	7.67	8.94	10.20	11.49	12.78	14.04	15.30	17.88	20.40	25.56	30.60	35.70

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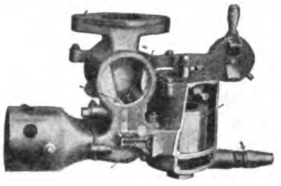

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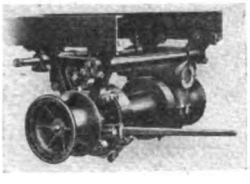

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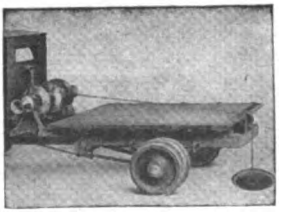

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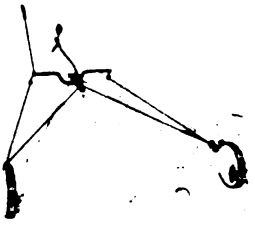

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Weight in Pounds of Sheet and Bar Aluminun, Brass and Steel

Thickness or Diam. in Inch		Sheets per Square Foot			Square Bars, One Foot Long			Round Bars, One Foot Long		
Fraction	Dec.	Alum.	Brass	Steel	Alum.	Brass	Steel	Alum.	Brass	Steel
1/16	.0625	.869	2.77	2.52	.004	.014	.013	.003	.011	.010
1/8	.125	1.739	5.55	5.10	.018	.057	.053	.014	.047	.042
3/16	.1875	2.609	8.32	7.65	.041	.131	.119	.032	.102	.094
1/4	.2500	3.479	11.10	10.20	.072	.230	.212	.057	.182	.167
5/16	.3125	4.348	13.87	12.75	.114	.380	.333	.089	.284	.261
3/8	.3750	5.218	16.64	15.30	.163	.520	.478	.128	.408	.375
7/16	.4375	6.088	19.42	17.85	.222	.708	.651	.174	.555	.512
1/2	.5000	6.958	22.20	20.40	.290	.925	.850	.227	.724	.667
9/16	.5625	7.827	24.97	22.95	.367	1.171	1.076	.288	.919	.845
5/8	.6250	8.697	27.74	25.50	.453	1.445	1.328	.356	1.136	1.043
11/16	.6875	9.567	30.52	28.05	.548	1.748	1.608	.430	1.372	1.262
3/4	.7500	10.436	33.29	30.60	.652	2.080	1.913	.516	1.646	1.502
13/16	.8125	11.306	36.07	33.15	.766	2.445	2.245	.601	1.917	1.763
7/8	.8750	12.175	38.84	35.70	.888	2.833	2.603	.697	2.223	2.044
15/16	.9375	13.045	41.61	38.25	1.019	3.251	2.989	.800	2.552	2.347
1	1.0000	13.915	44.39	40.80	1.159	3.697	3.400	.911	2.906	2.670
1 1/16	1.0625	14.784	47.16	43.35	1.309	4.176	3.838	1.028	3.279	3.014
1 1/8	1.125	15.654	49.94	45.90	1.467	4.630	4.303	1.152	3.675	3.379
1 3/16	1.1875	16.524	52.71	48.45	1.635	5.216	4.795	1.284	4.096	3.766
1 1/4	1.2500	17.394	55.48	51.00	1.812	5.780	5.312	1.423	4.539	4.173
1 5/16	1.3125	18.263	58.26	53.55	1.997	6.370	5.857	1.569	5.003	4.600
1 3/8	1.3750	19.133	61.04	56.10	2.192	6.692	6.428	1.722	5.491	5.049
1 7/16	1.4375	20.002	63.81	58.65	2.396	7.644	7.026	1.882	6.002	5.518
1 1/2	1.5000	20.872	66.58	61.20	2.609	8.322	7.650	2.049	6.536	6.008
1 9/16	1.5625	21.741	69.35	63.75	2.831	9.030	8.301	2.223	7.091	6.520
1 5/8	1.6250	22.611	72.13	66.30	3.062	9.768	8.978	2.405	7.672	7.051
1 11/16	1.6875	23.481	74.90	68.85	3.302	10.53	9.682	2.593	8.271	7.604
1 3/4	1.7500	24.350	77.67	71.40	3.550	11.32	10.41	2.789	8.896	8.178
1 13/16	1.8125	25.250	80.54	73.95	3.810	12.15	11.17	2.992	9.544	8.773
1 7/8	1.8750	26.090	83.22	76.50	4.075	13.00	11.95	3.202	10.21	9.388
1 15/16	1.9375	26.960	86.00	79.05	4.352	13.88	12.76	3.417	10.90	10.02
2	2.0000	27.829	88.77	81.60	4.638	14.79	13.60	3.642	11.62	10.68

Weight of Aluminum, Iron, Copper, Brass and Lead Balls

Dia. In.	Alum., Lbs.	Iron, Lbs.	Copper, Lbs.	Brass, Lbs.	Lead, Lbs.	Dia., In.	Alum. Lbs.	Iron, Lbs.	Copper Lbs.	Brass, Lbs.	Lead, Lbs.
1	.045	.136	.166	.158	.214	7	15.58	46.76	57.1	54.5	73.7
1½	.153	.46	.562	.537	.727	7½	19.17	57.52	70.0	67.11	90.0
2	.363	1.09	1.3	1.25	1.7	8	23.27	69.81	85.2	81.4	110.1
2½	.710	2.13	2.60	2.50	3.35	8½	27.91	83.73	102.3	100.0	132.3
3	1.22	3.68	4.5	4.3	5.8	9	33.10	99.4	121.3	115.9	156.7
3½	1.94	5.84	7.14	6.82	9.23	9½	38.90	116.9	143.0	136.4	184.7
4	2.90	8.72	10.7	10.2	13.8	10	45.45	136.35	166.4	159.0	215.0
4½	3.13	12.42	15.25	14.5	19.6	10½	52.60	157.84	193.0	184.0	250.0
5	5.68	17.04	20.8	19.9	26.9	11	60.49	181.48	221.8	211.8	286.7
5½	7.56	22.68	27.74	26.47	36.0	11½	69.12	207.37	253.5	242.0	327.7
6	9.81	29.45	35.9	34.3	46.4	12	78.54	235.62	288.1	275.0	372.2
6½	12.48	37.44	45.76	43.67	59.13						

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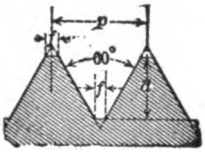
UNITED STATES 60° SCREW THREAD



Formula
$$\begin{cases} p = \text{pitch} = \dfrac{1}{\text{No. threads per inch}} \\ d = \text{depth} = p \times .6495 \\ f = \text{flat} = \dfrac{p}{8} \end{cases}$$

Diameter of Screw	Threads to Inch	Diameter at Root of Thread	Width of Flat
1/4	20	.185	.0063
5/16	18	.2403	.0069
3/8	16	.2936	.0078
7/16	14	.3447	.0089
1/2	13	.4001	.0096
9/16	12	.4542	.0104
5/8	11	.5069	.0114
3/4	10	.6201	.0125
7/8	9	.7307	.0139
1	8	.8376	.0156
1 1/8	7	.9394	.0179
1 1/4	7	1.0644	.0179
1 3/8	6	1.1585	.0208
1 1/2	6	1.2835	.0208
1 5/8	5 1/2	1.3888	.0227
1 3/4	5	1.4902	.0250
1 7/8	5	1.6152	.0250
2	4 1/2	1.7113	.0278
2 1/4	4 1/2	1.9613	.0278
2 1/2	4	2.1752	.0313
2 3/4	4	2.4252	.0313
3	3 1/2	2.6288	.0357
3 1/4	3 1/2	2.8788	.0357
3 1/2	3 1/4	3.1003	.0385
3 3/4	3	3.3170	.0417
4	3	3.5670	.0418
4 1/4	2 7/8	3.7982	.0455
4 1/2	2 3/4	4.0276	.0455
4 3/4	2 5/8	4.2551	.0476
5	2 1/2	4.4804	.0500
5 1/4	2 1/2	4.7304	.0500
5 1/2	2 3/8	4.9530	.0526
5 3/4	2 3/8	5.2030	.0526
6	2 1/4	5.4226	.0556

Standard Proportions for Machine Screws

The report of the committee on standard proportions for machine screws of the American Society of Mechanical Engineers is published in the October, 1906, proceedings of the society. The report is substantially in agreement with the recommendations adopted at the joint meeting held in New York, April 11, 1904.

The committee believes the following combined details to be essential in establishing and maintaining a standard for the diameters, threads and heads of machine screws, including, as it does, diameters, threads and limits for the taps which are to be used in connection therewith: (*a*) form of thread, (*b*) diameters, (*c*) number of threads per inch, (*d*) standard reference thread gauges, basic and for screws and taps, (*e*) working gauges for screws and taps, (*f*) limits of variation, measured in the angle of the thread, (*g*) limits of variation in external diameter, (*h*) limits of variation in the pitch of the thread screws and taps, (*k*) proportions of the heads.

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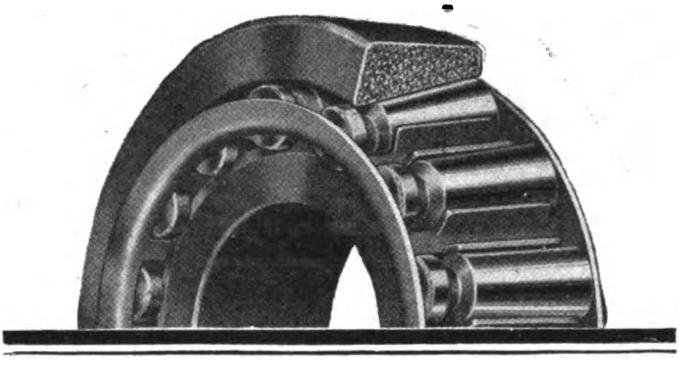

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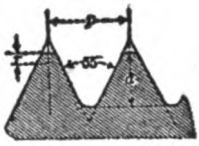
Whitworth Standard Thread



Formula
$$\begin{cases} p = \text{pitch} = \dfrac{1}{\text{No. threads per inch}} \\ d = \text{depth} = p \times .64033 \\ r = \text{radius} = p \times .1373 \end{cases}$$

Full Diameter	No. of Threads per Inch	Pitch	Standard Depth of Thread	Effective Diameter	Core Diameter	Cross Sectional Area at Bottom of Thread
1/4 (.25)	20	.0500	.0320	.2180	.1860	.0272
5/16 (.3125)	18	.0556	.0356	.2769	.2414	.0458
3/8 (.375)	16	.0625	.0400	.3350	.2950	.0683
7/16 (.4375)	14	.0714	.0457	.3918	.3460	.0940
1/2 (.5)	12	.0833	.0534	.4466	.3933	.1215
9/16 (.5625)	12	.0833	.0534	.5091	.4558	.1632
5/8 (.625)	11	.0909	.0582	.5668	.5086	.2032
11/16 (.6875)	11	.0909	.0582	.6293	.5711	.2562
3/4 (.75)	10	.1000	.0640	.6860	.6219	.3038
13/16 (.8125)	10	.1000	.0640	.7485	.6844	.3679
7/8 (.875)	9	.1111	.0711	.8039	.7327	.4216
1	8	.1250	.0800	.9200	.8399	.5540
1 1/8 (1.125)	7	.1429	.0915	1.0335	.9420	.6969
1 1/4 (1.25)	7	.1429	.0915	1.1585	1.0670	.8942
1 3/8 (1.375)	6	.1667	.1067	1.2683	1.1616	1.0597
1 1/2 (1.5)	6	.1667	.1067	1.3933	1.2866	1.3001
1 5/8 (1.625)	5	.2000	.1281	1.4969	1.3689	1.4718
1 3/4 (1.75)	5	.2000	.1281	1.6219	1.4939	1.7528
2	4 1/2	.2222	.1423	1.8577	1.7154	2.3111
2 1/4 (2.25)	4	.2500	.1601	2.0899	1.9298	2.9249
2 1/2 (2.5)	4	.2500	.1601	2.3399	2.1798	3.7318
2 3/4 (2.75)	3 1/2	.2857	.1830	2.5670	2.3841	4.4641
3	3 1/2	.2857	.1830	2.8170	2.6341	5.4496
3 1/4 (3.25)	3 1/4	.3077	.1970	3.0530	2.8560	6.4063
3 1/2 (3.50)	3 1/4	.3077	.1970	3.3030	3.1060	7.5769
3 3/4 (3.75)	3	.3333	.2134	3.5366	3.231	8.6732
4	3	.3333	2134	3.7866	3.5731	10.0272
4 1/2 (4.50)	2 7/8	.3478	.2227	4.2773	4.0546	12.9118
5	2 3/4	.3636	.2328	4.7672	4.5343	16.1477
5 1/2 (5.50)	2 5/8	.3810	.2439	5.2561	5.0121	19.7301
6	2 1/2	.4000	.2561	5.7439	5.4877	23.6521

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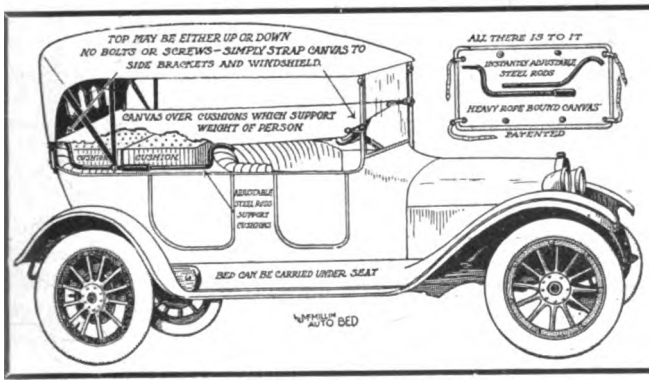

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International (Metric System) Standard 60° Thread

Diameter of Screw	Pitch	Diameter at Root of Thread	Width of Flat at Top and Bottom of Thread
Millimetres	*Millimetres*	*Millimetres*	*Millimetres*
3	.5	2.35	.06
4	.75	3.03	.09
5	.75	4.03	.09
6	1.0	4.70	.13
7	1.0	5.70	.13
8	1.0	6.70	.13
8	1.25	6 38	.16
9	1.0	7.70	.13
9	1.25	7.38	.16
10	1.5	8.05	.19
11	1.5	9.05	.19
12	1.5	10.05	.19
12	1.75	9.73	.22
14	2.0	11.40	.25
16	2.0	13.40	.25
18	2.5	14.75	.31
20	2.5	16.75	.31
22	2.5	18.75	.31
22	3.0	18.10	.38
24	3.0	20.10	.38
26	3.0	22.10	.38
27	3.0	23.10	.38
28	3.0	24.10	.38
30	3.5	25.45	.44
32	3.5	27.45	.44
33	3.5	28.45	.44
34	3.5	29.45	.44
36	4.0	30.80	.5
38	4.0	32.80	.5
39	4.0	33.80	.5
40	4.0	34.80	.5
42	4.5	36.15	.56
44	4.5	38.15	.56
45	4.5	39.15	.56
46	4.5	40.15	.56
48	5.0	41.51	.63
50	5.0	43.51	.63
52	5.0	45.51	.63

NOTE.—This thread is largely used by Italian constructors.

Drill Sizes for S. A. E. Threads

Size of Tap	Size of Drill
1/4 inch x 28 threads	7/32 inch
5/16 " x 24 "	17/64 "
3/8 " x 24 "	21/64 "
7/16 " x 20 "	3/8 "
1/2 " x 20 "	7/16 "
9/16 " x 18 "	1/2 "
5/8 " x 18 "	9/16 "
11/16 " x 16 "	39/64 "
3/4 " x 16 "	43/64 "
7/8 " x 14 "	25/32 "
1 " x 14 "	29/32 "
1 1/8 " x 12 "	1 1/64 "
1 1/4 " x 12 "	1 9/64 "
1 3/8 " x 12 "	1 17/64 "
1 1/2 " x 12 "	1 25/64 "

The above tap drills allow a thread within 1-64 in. of full thread.

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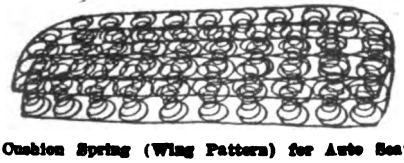

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Drill Sizes for Standard Threads

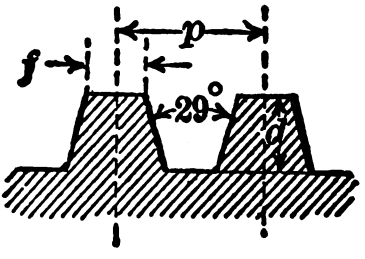
These sizes give an allowance above the bottom of thread on sizes ¼ to 2; varying respectively as follows: for "V" Threads, .010" to .055"; for U. S. S. and Whitworth threads .005" to .027".

These are found by adding to the size at bottom of thread ¼ of the pitch for "V" threads, and ⅛ of the pitch for U. S. S. and Whitworth, the pitch being equal to 1" ÷ No. of threads per 1".

In practice it is better to use a larger drill if the exact size called for cannot be had.

Size Screw	No. of Threads	Size of Drill			Size Screw	No. of Threads	Size of Drill		
		U. S. S.	"V"	W.			U. S. S.	"V"	W.
¼	24	.201	.196	.202	15/16	9	.808	.790	.810
¼	20	.191	.184	.192	1	8	.854	.832	.856
5/16	18	.248	.239	.249	1 1/16	8	.917	.894	.919
⅜	16	.302	.293	.303	1⅛	7	.957	.932	.960
7/16	14	.354	.345	.355	1¼	7	1.082	1.057	1.085
½	13	.409	.399	.410	1⅜	6	1.179	1.144	1.182
½	12	.402	.391	.403	1½	6	1.304	1.269	1.307
9/16	12	.465	.453	.466	1⅝	5½	1.412	1.372	1.416
⅝	11	.518	.506	.520	1⅝	5	1.390	1.347	1.394
11/16	11	.581	.568	.583	1¾	5	1.515	1.472	1.519
¾	10	.632	.618	.634	1⅞	5	1.640	1.597	1.644
13/16	10	.695	.680	.697	1⅞	4½	1.614	1.566	1.619
⅞	9	.745	.728	.747	2	4½	1.739	1.691	1.744

The Acme Standard Thread



The Acme Standard Thread is a little shallower than the Worm Thread, but the same depth as the square thread and much stronger than the latter.

The various parts are obtained as follows:

$$\text{Width of Point of Tool for Screw or Tap Thread} = \frac{.3707}{\text{No. of Threads per in.}} - .0052$$

$$\text{Width of Screw or Nut Thread} = \frac{.3707}{\text{No. of Threads per in.}}$$

$$\text{Diameter of Tap} = \text{Diameter of Screw} + .020$$

$$\text{Diameter of Tap or Screw at Root} = \text{Diameter of Screw} - \left\{\frac{1}{\text{No. of Linear Threads per in.}} + .020\right\}$$

$$\text{Depth of Thread} = \frac{1}{2 \times \text{No. of Threads per in.}} + .010$$

(Continued on following page)

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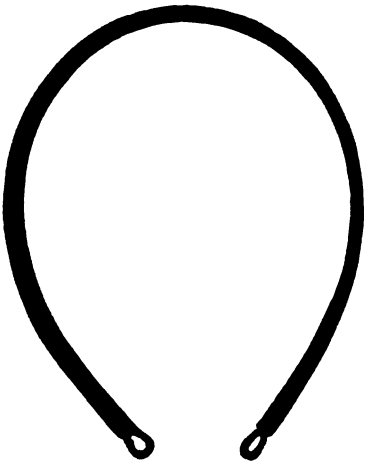

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TABLE OF ACME THREAD PARTS

No. of Threads per Inch	Depth of Thread	Width at Top of Thread	Width at Bottom of Thread	Space at Top of Thread	Thickness at Root of Thread
1	.5100	.3707	.3655	.6293	.6345
1½	.3850	.2780	.2728	.4720	.4772
2	.2600	.1853	.1801	.3147	.3199
3	.1767	.1235	.1183	.2098	.2150
4	.1350	.0927	.0875	.1573	.1625
5	.1100	.0741	.0689	.1259	.1311
6	.0933	.0618	.0566	.1049	.1101
7	.0814	.0529	.0478	.0899	.0951
8	.0725	.0463	.0411	.0787	.0839
9	.0655	.0413	.0361	.0699	.0751
10	.0600	.0371	.0319	.0629	.0681

CONSTANTS FOR FINDING DIAMETER AT BOTTOM OF ACME THREAD

Threads per Inch	U. S. Standard Constant	Sharp V Thread Constant	Threads per Inch	U. S. Standard Constant	Sharp V Thread Constant
64	.02029	.02706	16	.08118	.10825
60	.02165	.02887	14	.09278	.12357
56	.02319	.03093	13	.09992	.13323
50	.02598	.03464	12	.10825	.14433
48	.02706	.03608	11	.11809	.15745
44	.02952	.03936	10	.12990	.17320
40	.03247	.04330	9	.14433	.19244
36	.03608	.04811	8	.16237	.21650
32	.04059	.05412	7	.18555	.24742
30	.04330	.05773	6	.21650	.28866
28	.04639	.06185	5½	.23618	.31490
26	.04996	.06661	5	.25980	.34650
24	.05412	.07216	4½	.28866	.38488
22	.05904	.07872	4	.32475	.43300
20	.06495	.08660	3½	.37114	.49485
18	.07216	.09622	3	.43333	.57733

C = Constant for number of threads per inch.
D = Outside diameter.
D^1 = Diameter at bottom of thread.

$$D^1 = D - C.$$

EXAMPLE.—Given outside diameter of U. S. S. screw thread, 2 inches, 4½ threads per inch; find diameter at bottom of thread. D = 2 inches; for 4½ threads U. S. S., constant, C = .2886; then diameter at bottom of thread, $D^1 = 2 - .2886 = 1.7114$ inches.

NOTE:—The above formula and constants are based on a perfectly sharp thread in considering V threads. With the usual blunted threads, therefore, the actual bottom diameters are a trifle larger for bolts and a trifle smaller for nuts than the diameters obtained with the formula and V-thread constants.

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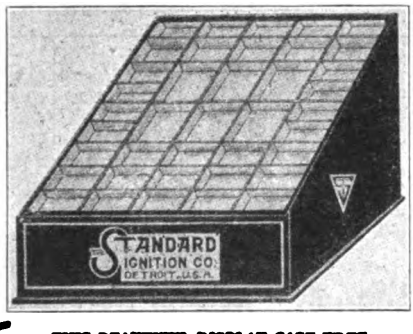

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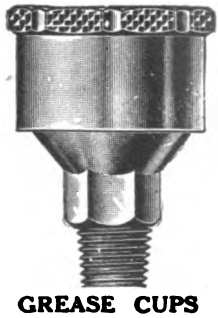

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1	2	3	4	5	6	7	8	9	10	Gallons	Gal'ns per Inch
5x12	6x18	6x24	6x36	6x42						6" diam'r	.122
	7x12	7x18	7x24	7x30	7x36	7x42	7x48			7" "	.165
		8x15	8x18	8x24	8x30	8x36	8x42	8x45	8x48	8" "	.217
		9x12	9x15	9x18	9x24	9x30	9x34	9x36	9x40	9" "	.275
					10x20	10x24	10x26	10x28	10x32	10" "	.340
						12x16	12x18	12x20	12x24	12" "	.486

10	15	20	25	30	35	40	45	50	Gallons	Gal'ns per Inch
8x48									8" diam'r	.217
9x40									9" "	.275
10x32	10x48								10" "	.340
12x24	12x34	12x42	12x50	12x60					12" "	.486
14x18	14x24	14x30	14x38	14x44	14x52	14x60			14" "	.666
	16x18	16x24	16x30	16x36	16x42	16x48	16x54	16x60	16" "	.870

Areas of Small Circles

Figured from diameters in decimal fractions of 1 inch (or other unit of linear measurement).

Diameter	SECOND DECIMAL IN LENGTH OF DIAMETER									
	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
.0	.0	.000078	.00031	.0007	.00125	.00196	.00283	.00385	.00503	.00636
.1	.0078	.0095	.0113	.0133	.0154	.0177	.0201	.0227	.0255	.0283
.2	.0314	.03464	.038	.0415	.0452	.0491	.0531	.0572	.0616	.066
.3	.0706	.0755	.0804	.0855	.0908	.0962	.1018	.1075	.1134	.1195
.4	.1256	.132	.1385	.1452	.1520	.1590	.1662	.1735	.181	.1886
.5	.1963	.2043	.2124	.2206	.2290	.2376	.2463	.2552	.2642	.2734
.6	.2827	.2922	.3014	.3117	.3217	.3318	.3421	.3526	.3632	.3739
.7	.3848	.3959	.4071	.4185	.4301	.4418	.4536	.4657	.4778	.4902
.8	.5026	.5153	.5281	.5411	.5542	.5674	.5809	.5945	.6082	.6221
.9	.6362	.6504	.6648	.6793	.694	.7088	.7238	.739	.7543	.7698

Example: What is area of circle with diameter 0.45 inch (or centimeter). Follow line .4 column .05. Answer: .1590 square inch (or square centimeter).

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For Automobile, Truck and Tractor Motors

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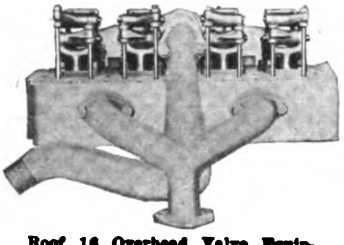

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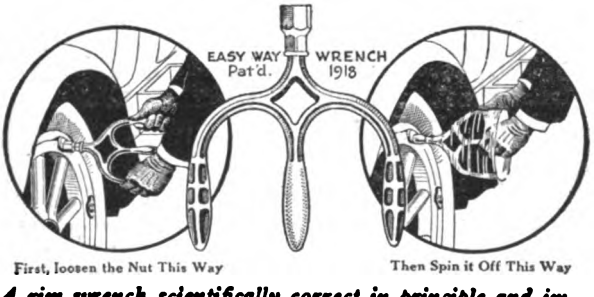

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Easily moves rusted on nuts.
Will not slip and skin your knuckles.
Does not round off nut corners.

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Circumferences and Areas of Circles

Diameters from 1-64 inch to 63 inches

Diam.	Circum.	Area	Diam.	Circum.	Area	Diam.	Circum.	Area
1/64	.04909	.00019	2	6.2832	3.1416	5	15.708	19.635
1/32	.09818	.00077	1/16	6.4795	3.3410	1/16	15.904	20.129
3/64	.14726	.00173				1/8	16.101	20.629
			1/8	6.6759	3.5466			
1/16	.19635	.00307	3/16	6.8722	3.7583	3/16	16.297	21.135
3/32	.29452	.00690	1/4	7.0686	3.9761	1/4	16.493	21.648
1/8	.39270	.01227				5/16	16.690	22.166
			5/16	7.2649	4.2000			
5/32	.49087	.01917	3/8	7.4613	4.4301	3/8	16.886	22.691
3/16	.58905	.02761	7/16	7.6576	4.6664	7/16	17.082	23.221
7/32	.68722	.03758				1/2	17.279	23.758
			1/2	7.8540	4.9087			
1/4	.78540	.04909	9/16	8.0503	5.1572	9/16	17.475	24.301
9/32	.88357	.06213	5/8	8.2467	5.4119	5/8	17.671	24.850
5/16	.98175	.07670				11/16	17.868	25.406
			11/16	8.4430	5.6727			
11/32	1.0799	.09281	3/4	8.6394	5.9396	3/4	18.064	25.967
3/8	1.1781	.11045	13/16	8.8357	6.2126	13/16	18.261	26.535
13/32	1.2763	.12962				7/8	18.457	27.109
			7/8	9.0321	6.4918			
7/16	1.3744	.15033	15/16	9.2284	6.7771	15/16	18.653	27.688
15/32	1.4726	.17257	3	9.4284	7.0686	6	18.850	28.274
1/2	1.5708	.19635				1/8	19.242	29.465
			1/16	9.6211	7.3662			
17/32	1.6690	.22166	1/8	9.8175	7.6699	1/4	19.635	30.680
9/16	1.7671	.24850	3/16	10.014	7.9798	3/8	20.028	31.919
19/32	1.8653	.27688				1/2	20.420	33.183
			1/4	10.210	8.2958			
5/8	1.9635	.30680	5/16	10.407	8.6179	5/8	20.813	34.472
21/32	2.0617	.33824	3/8	10.603	8.9462	3/4	21.206	35.785
11/16	2.1598	.37122				7/8	21.598	37.122
			7/16	10.799	9.2806			
23/32	2.2580	.40574	1/2	10.996	9.6211	7	21.991	38.485
3/4	2.3562	.44179	9/16	11.192	9.9678	1/8	22.384	39.871
25/32	2.4544	.47937				1/4	22.776	41.282
			5/8	11.388	10.321			
13/16	2.5525	.51849	11/16	11.585	10.680	3/8	23.169	42.718
27/32	2.6507	.55914	3/4	11.781	11.045	1/2	23.562	44.179
7/8	2.7489	.60132				5/8	23.955	45.664
			13/16	11.977	11.416			
29/32	2.8471	.64504	7/8	12.174	11.793	3/4	24.347	47.173
15/16	2.9452	.69029	15/16	12.370	12.177	7/8	24.740	48.707
31/32	3.0434	.73708				8	25.133	50.265
			4	12.566	12.566			
1	3.1416	.7854	1/16	12.763	12.962	1/8	25.525	51.849
1/16	3.3379	.8866	1/8	12.959	13.364	1/4	25.918	53.456
1/8	3.5343	.9940				3/8	26.311	55.088
3/16	3.7306	1.1075	3/16	13.155	13.772			
			1/4	13.352	14.186			
1/4	3.9270	1.2272	5/16	13.548	14.607	1/2	26.704	56.745
5/16	4.1233	1.3530				5/8	27.096	58.426
3/8	4.3197	1.4849				3/4	27.489	60.132
7/16	4.5160	1.6230	3/8	13.744	15.033	7/8	27.882	61.862
			7/16	13.941	15.466			
1/2	4.7124	1.7671	1/2	14.137	15.904	9	28.274	63.617
9/16	4.9087	1.9175	9/16	14.334	16.349	1/8	28.667	65.397
5/8	5.1051	2.0739	5/8	14.530	16.800	1/4	29.060	67.201
11/16	5.3014	2.2365	11/16	14.726	17.257	3/8	29.452	69.029
3/4	5.4978	2.4053	3/4	14.923	17.728	1/2	29.845	70.882
13/16	5.6941	2.5802	13/16	15.119	18.190	5/8	30.238	72.760
7/8	5.8905	2.7612	7/8	15.315	18.665	3/4	30.631	74.662
15/16	6.0868	2.9483	15/16	15.512	19.147	7/8	31.023	76.589

(*Continued on following page*)

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A Quality Line with Unusual Profits

Importers find "Malco" tires an ideal proposition. Quick sales, satisfied customers and an exceedingly liberal margin of profit.
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Madison
SUPERB ENDURANCE
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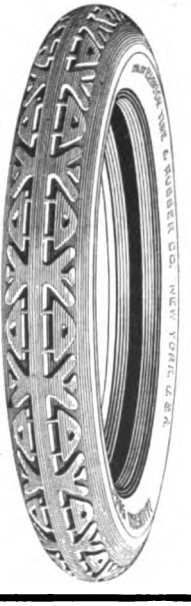

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Chicago, 1606 Michigan Ave.
Boston, 859 Boylston St.
Atlanta, 303-5 Peachtree St.
Export Dept.: 20 W. 60th St., N. Y.
Cable: "Madtire"
Factories: Buffalo, N. Y.

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Circumferences and Areas of Circles—(Continued)

Diam.	Circum.	Area	Diam.	Circum.	Area	Diam.	Circum.	Area
10	31.416	78.540	15 ⅛	49.480	194.83	21 ⅛	68.330	371.54
			¼	49.873	197.93	¼	68.722	375.83
⅛	31.809	80.516	16	50.265	201.06	22	69.115	380.13
¼	32.201	82.516						
⅜	32.594	84.541	⅛	50.658	204.22	⅛	69.508	384.46
			¼	51.051	207.39	¼	69.900	388.82
½	32.987	86.590	⅜	51.444	210.60	⅜	70.293	393.20
⅝	33.379	88.664						
¾	33.772	90.763	½	51.836	213.82	½	70.686	397.61
			⅝	52.229	217.08	⅝	71.079	402.04
⅞	34.165	92.886	¾	52.622	220.35	¾	71.471	406.49
11	34.558	95.033						
⅛	34.950	97.205	⅞	53.014	223.65	⅞	71.864	410.97
			17	53.407	226.98	23	72.257	415.48
¼	35.343	99.402	⅛	53.800	230.33	⅛	72.649	420.00
⅜	35.736	101.62						
½	36.128	103.87	¼	54.192	233.71	¼	73.042	424.56
			⅜	54.585	237.10	⅜	73.435	429.13
⅝	36.521	106.14	½	54.978	240.53	½	73.827	433.74
¾	36.914	108.43						
⅞	37.306	110.75	⅝	55.371	243.98	⅝	74.220	438.36
			¾	55.763	247.45	¾	74.613	443.01
12	37.699	113.10	⅞	56.156	250.95	⅞	75.006	447.69
⅛	38.092	115.47						
¼	38.485	117.86	18	56.549	254.47	24	75.398	452.39
			⅛	56.941	258.02	⅛	75.791	457.11
⅜	38.877	120.28	¼	57.334	261.59	¼	76.184	461.86
½	39.270	122.72						
⅝	39.663	125.19	⅜	57.727	265.18	⅜	76.576	466.64
			½	58.119	268.80	½	76.969	471.44
¾	40.055	127.68	⅝	58.512	272.45	⅝	77.362	476.26
⅞	40.448	130.19						
13	40.841	132.73	¾	58.905	276.12	¾	77.754	481.11
			⅞	59.298	279.81	⅞	78.147	485.98
⅛	41.233	135.30	19	59.690	283.53	25	78.540	490.87
¼	41.626	137.89						
⅜	42.019	140.50	⅛	60.083	287.27	⅛	78.933	495.79
			¼	60.476	291.04	¼	79.325	500.74
½	42.412	143.14	⅜	60.868	294.83	⅜	79.718	505.71
⅝	42.804	145.80						
¾	43.197	148.49	½	61.261	298.65	½	80.111	510.71
			⅝	61.654	302.49	⅝	80.503	515.72
⅞	43.590	151.20	¾	62.046	306.35	¾	80.896	520.77
14	43.982	153.94						
⅛	44.375	156.70	⅞	62.439	310.24	⅞	81.289	525.84
			20	62.832	314.16	26	81.681	530.93
¼	44.768	159.48	⅛	63.225	318.10	⅛	82.074	536.05
⅜	45.160	162.30						
½	45.553	165.13	¼	63.617	322.06	¼	82.467	541.19
			⅜	64.010	326.05	⅜	82.860	546.35
⅝	45.946	167.99	½	64.403	330.06	½	83.252	551.55
¾	46.338	170.87						
⅞	46.731	173.78	⅝	64.795	334.10	⅝	83.645	556.76
			¾	65.188	338.16	¾	84.038	562.00
15	47.124	176.71	⅞	65.581	342.25	⅞	84.430	567.27
⅛	47.517	179.67	21	65.973	346.36	27	84.823	572.56
¼	47.909	182.65	⅛	66.366	350.50	⅛	85.216	577.87
			¼	66.759	354.66	¼	85.608	583.21
⅜	48.302	185.66						
½	48.695	188.69	⅜	67.152	358.84	⅜	86.001	588.57
⅝	49.087	191.75	½	67.544	363.05	½	86.394	593.96
			⅝	67.937	367.28	⅝	86.786	599.37

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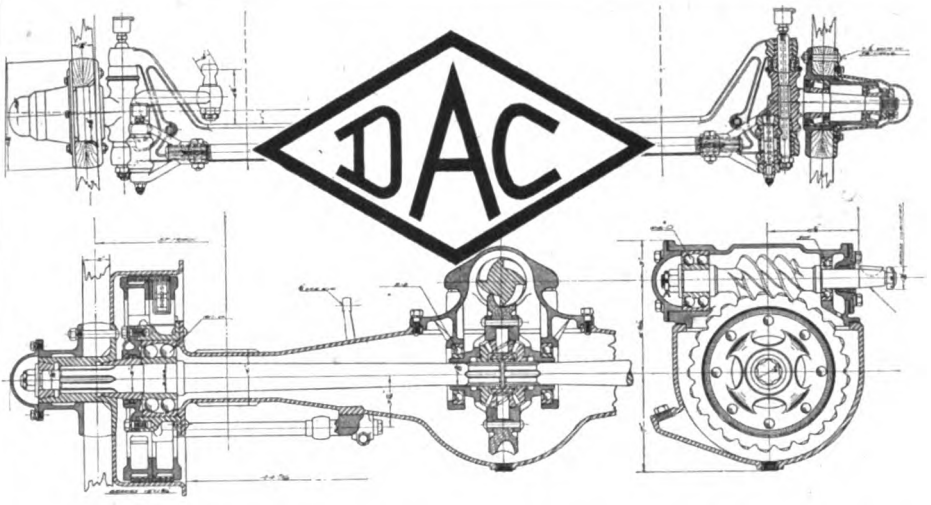

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Correspondence Invited

DUNKIRK AXLE CORPORATION

DUNKIRK, N. Y.

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Circumferences and Areas of Circles (Continued)

Diam.	Circum.	Area	Diam.	Circum.	Area	Diam.	Circum.	Area
27 ⅛	87.179	604.81	33 ⅛	105.636	888.00	39 ⅛	124.486	1233.2
¼	87.572	610.27	¼	106.029	894.62	¼	124.878	1241.0
28	87.965	615.75	⅜	106.421	901.26	⅜	125.271	1248.8
½	88.357	621.26	34	106.814	097.92	40	125.664	1256.6
⅝	88.750	626.80	½	107.207	914.61	½	126.056	1264.5
¾	89.143	632.36	⅝	107.600	921.32	⅝	126.449	1272.4
⅞	89.535	637.94	¾	107.992	928.06	¾	126.842	1280.3
⅛	89.928	643.55	⅞	108.385	934.82	⅞	127.235	1288.2
¼	90.321	649.18	⅛	108.778	941.61	⅛	127.627	1296.2
⅜	90.713	654.84	¼	109.170	948.42	¼	128.020	1304.2
29	91.106	660.52	⅜	109.563	955.25	⅜	128.413	1312.2
½	91.499	666.23	35	109.956	962.11	41	128.805	1320.3
⅝	91.892	671.96	½	110.348	969.00	½	129.198	1328.3
¾	92.284	677.71	⅝	110.741	975.91	⅝	129.591	1336.4
⅞	92.677	683.49	¾	111.134	982.84	¾	129.983	1344.5
⅛	93.070	689.30	⅞	111.527	989.80	⅞	130.376	1352.7
¼	93.462	695.13	⅛	111.919	996.78	⅛	130.769	1360.8
⅜	93.855	700.98	¼	112.312	1003.8	¼	131.161	1369.0
30	94.248	706.86	⅜	112.705	1010.8	⅜	131.554	1377.2
½	94.640	712.76	36	113.097	1017.9	42	131.947	1385.4
⅝	95.033	718.69	½	113.490	1025.0	½	132.340	1393.7
¾	95.426	724.64	⅝	113.883	1032.1	⅝	132.732	1402.0
⅞	95.819	730.62	¾	114.275	1039.2	¾	133.125	1410.3
⅛	96.211	736.62	⅞	114.668	1046.3	⅞	133.518	1418.6
¼	96.604	742.64	⅛	115.061	1053.5	⅛	133.910	1427.0
⅜	96.997	748.69	¼	115.454	1060.7	¼	134.303	1435.4
31	97.389	754.77	⅜	115.846	1068.0	⅜	134.696	1443.8
½	97.782	760.87	37	116.239	1075.2	43	135.088	1452.2
⅝	98.175	766.99	½	116.632	1082.5	½	135.481	1460.7
¾	98.567	773.14	⅝	117.024	1089.8	⅝	135.874	1469.1
⅞	98.960	779.31	¾	117.417	1097.1	¾	136.267	1477.6
⅛	99.353	785.51	⅞	117.810	1104.5	⅞	136.659	1486.2
¼	99.746	791.73	⅛	118.202	1111.8	⅛	137.052	1494.7
⅜	100.138	797.98	¼	118.596	1119.2	¼	137.445	1503.3
32	100.531	804.25	⅜	118.988	1126.7	⅜	137.837	1511.9
½	100.924	810.54	38	119.381	1134.1	44	138.230	1520.5
⅝	101.316	816.86	½	119.773	1141.6	½	138.623	1529.2
¾	101.709	823.21	⅝	120.166	1149.1	⅝	139.015	1537.9
⅞	102.102	829.58	¾	120.559	1156.6	¾	139.408	1546.6
⅛	102.494	835.97	⅞	120.951	1164.2	⅞	139.801	1555.3
¼	102.887	842.39	⅛	121.344	1171.7	⅛	140.194	1564.0
⅜	103.280	848.83	¼	121.737	1179.3	¼	140.586	1572.8
33	103.673	855.30	⅜	122.129	1186.9	⅜	140.979	1581.6
½	104.065	864.79	39	122.522	1194.6	45	141.372	1590.4
⅝	104.458	868.31	½	122.915	1202.3	½	141.764	1599.3
¾	104.851	874.85	⅝	123.308	1210.0	⅝	142.157	1608.2
⅞	105.243	881.41	¾	123.700	1217.7	¾	142.550	1617.0
			⅞	124.093	1225.4	⅞	142.942	1626.0
						⅛	143.335	1634.9

(*Continued on following page*)

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TIGHT
ACCURATE
RESILIENT
UNIT CONSTRUCTION
PERFECT COMPRESSION

K-P Rings are the three-piece rings with the side lock and groove which hold the pieces together as one unit.

They *fit*. They bear equally on every point of the cylinder wall. They can't leak. That means

MORE POWER

Stock them. Recommend them. Make satisfied customers. Send for booklet "Economy and Power." It tells why.

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LINCOLN HIGHWAY TIRES
Are Better Tires

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AUTOMOBILE

Dash Ammeters

Garage Hand Lamps

Electric Lamp Connections

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Electric Warning Signals

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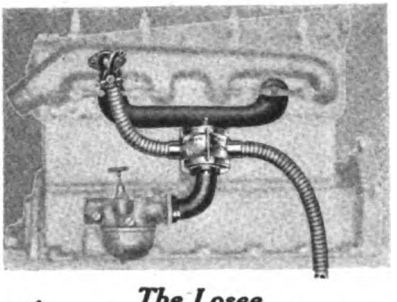
NEW YORK, U.S.A.



The Losee
Protect-O-Motor
"HOT SPOT"

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Circumferences and Areas of Circles (Continued)

Diam.	Circum.	Area	Diam.	Circum.	Area	Diam.	Circum.	Area
45 ¾	143.728	1643.9	51 ⅝	162.185	2093.2	57 ⅝	180.249	2585.4
⅞	144.121	1652.9	¾	162.577	2103.3	½	180.642	2596.7
46	144.513	1661.9	⅞	162.970	2113.5	⅝	181.034	2608.0
⅛	144.906	1670.9	52	163.363	2123.7	¾	181.427	2619.4
¼	145.299	1680.0	⅛	163.756	2133.9	⅞	181.820	2630.7
⅜	145.691	1689.1	¼	164.148	2144.2	58	182.212	2642.1
½	146.084	1698.2	⅜	164.541	2154.5	⅛	182.605	2653.5
⅝	146.477	1707.4	½	164.934	2164.8	¼	182.998	2664.9
¾	146.869	1716.5	⅝	165.326	2175.1	⅜	183.390	2676.4
⅞	147.262	1725.7	¾	165.719	2185.4	½	183.783	2687.8
47	147.655	1734.9	⅞	166.112	2195.8	⅝	184.176	2699.3
⅛	148.048	1744.2	53	166.504	2206.2	¾	184.569	2710.9
¼	148.440	1753.5	⅛	166.897	2216.6	⅞	184.961	2722.4
⅜	148.833	1762.7	¼	167.290	2227.0	59	185.354	2734.0
½	149.226	1772.1	⅜	167.683	2237.5	⅛	185.747	2745.6
⅝	149.618	1781.4	½	168.075	2248.0	¼	186.139	2757.2
¾	150.011	1790.8	⅝	168.468	2258.5	⅜	186.532	2768.8
⅞	150.404	1800.1	¾	168.861	2269.1	½	186.925	2780.5
48	150.796	1809.6	⅞	169.253	2279.6	⅝	187.317	2792.2
⅛	151.189	1819.0	54	169.646	2290.2	¾	187.710	2803.9
¼	151.582	1828.5	⅛	170.039	2300.8	⅞	188.103	2815.7
⅜	151.975	1837.9	¼	170.431	2311.5	60	188.496	2827.4
½	152.367	1847.5	⅜	170.824	2322.1	⅛	188.888	2839.2
⅝	152.760	1857.0	½	171.217	2332.8	¼	189.281	2851.0
¾	153.153	1866.5	⅝	171.609	2343.5	⅜	189.674	2862.9
⅞	153.545	1876.1	¾	172.002	2354.3	½	190.066	2874.8
49	153.938	1885.7	⅞	172.395	2365.0	⅝	190.459	2886.6
⅛	154.331	1895.4	55	172.788	2375.8	¾	190.852	2898.6
¼	154.723	1905.0	⅛	173.180	2386.6	⅞	191.244	2910.5
⅜	155.116	1914.7	¼	173.573	2397.5	61	191.637	2922.5
½	155.509	1924.4	⅜	173.966	2408.3	⅛	192.030	2934.5
⅝	155.902	1934.2	½	174.358	2419.2	¼	192.423	2946.5
¾	156.294	1943.9	⅝	174.751	2430.1	⅜	192.815	2958.5
⅞	156.687	1953.7	¾	175.144	2441.1	½	193.208	2970.6
50	157.080	1963.5	⅞	175.536	2452.0	⅝	193.601	2982.7
⅛	157.472	1973.3	56	175.929	2463.0	¾	193.993	2994.8
¼	157.865	1983.2	⅛	176.322	2474.0	⅞	194.386	3006.9
⅜	158.258	1993.1	¼	176.715	2485.0	62	194.779	3019.1
½	158.650	2003.0	⅜	177.107	2496.1	⅛	195.171	3031.3
⅝	159.043	2012.9				¼	195.564	3043.5
¾	159.426	2022.8	½	177.500	2507.2	⅜	195.957	3055.7
⅞	159.829	2032.8	⅝	177.893	2518.3	½	196.350	3068.0
51	160.221	2042.8	¾	178.285	2529.4			
						⅝	196.742	3080.3
⅛	160.614	2052.8	⅞	178.678	2540.6	¾	197.135	3092.6
¼	161.007	2062.9	57	179.071	2551.8			
⅜	161.399	2073.0	⅛	179.463	2563.0	⅞	197.528	3104.9
½	161.792	2083.1	¼	179.856	2574.2	63	197.920	3117.2

For diameters not listed in the tables, figure from the following:
Circumference = diameter × 3.1416.
Area = $r^2\pi = r^2 \times 3.1416$, but when diameter, D, is known it is figured from diameter: Area = $D^2 \times 0.7854$.

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Table for Division of Circles

Length of chord for angle $a = 2r \sin\frac{a}{2}$ Table is figured for r (being the radius of the circle) = 1. For other values of r, multiply by r.

Number of Divisions in Circumference	Angle of Each Division in Degrees and Minutes	Length of Chord for Each Division (for Radius = 1)	Number of Divisions in Circumference	Angle of Each Division in Degrees and Minutes	Length of Chord for Each Division (for Radius = 1)
3	120 deg.	1.73206	42	8 deg. 34 min.	0.14938
4	90 deg.	1.41422	43	8 deg. 22 min.	0.1459
5	72 deg.	1.17558	44	8 deg. 10 min.	0.14242
6	60 deg.	1	45	8 deg.	0.13952
7	51 deg. 25 min.	0.86732	46	7 deg. 49 min.	0.13603
8	45 deg.	0.76536	47	7 deg. 39 min.	0.133128
9	40 deg.	0.68404	48	7 deg. 30 min.	0.130806
10	36 deg.	0.61804	49	7 deg. 20 min.	0.127904
11	32 deg. 43 min.	0.563	50	7 deg. 12 min.	0.125582
12	30 deg.	0.51764	51	7 deg. 3 min.	0.122678
13	27 deg.	0.4782	52	6 deg. 55 min.	0.120356
14	25 deg.	0.4448	53	6 deg. 47 min.	0.118032
15	24 deg.	0.41582	54	6 deg. 40 min.	0.11629
16	22 deg. 30 min.	0.39018	55	6 deg. 32 min.	0.113966
17	21 deg. 10 min.	0.36734	56	6 deg. 25 min.	0.111644
18	20 deg.	0.3473	57	6 deg. 18 min.	0.1099
19	18 deg. 56 min.	0.32894	58	6 deg. 12 min.	0.108158
20	18 deg.	0.31286	59	6 deg. 06 min.	0.106414
21	17 deg. 08 min.	0.29792	60	6 deg.	0.104672
22	16 deg. 21 min.	0.2841	61	5 deg. 54 min.	0.102928
23	15 deg. 39 min.	0.272	62	5 deg. 48 min.	0.101186
24	15 deg.	0.26106	63	5 deg. 42 min.	0.099442
25	14 deg. 24 min.	0.25066	64	5 deg. 37 min.	0.0977
26	13 deg. 50 min.	0.24086	65	5 deg. 32 min.	0.096538
27	13 deg. 20 min.	0.23218	66	5 deg. 27 min.	0.094794
28	12 deg. 51 min.	0.22352	67	5 deg. 22 min.	0.093632
29	12 deg. 24 min.	0.216	68	5 deg. 17 min.	0.091888
30	12 deg.	0.20906	69	5 deg. 13 min.	0.090765
31	11 deg. 36 min.	0.20212	70	5 deg. 8 min.	0.089564
32	11 deg. 15 min.	0.19574	71	5 deg. 4 min.	0.088402
33	10 deg. 54 min.	0.18996	72	5 deg.	0.087238
34	10 deg. 35 min.	0.18416	73	4 deg. 55 min.	0.085496
35	10 deg. 17 min.	0.17894	74	4 deg. 51 min.	0.084332
36	10 deg.	0.17432	75	4 deg. 48 min.	0.083752
37	9 deg. 43 min.	0.1691	76	4 deg. 44 min.	0.083588
38	9 deg. 28 min.	0.16504	77	4 deg. 40 min.	0.081426
39	9 deg. 13 min.	0.1604	78	4 deg. 36 min.	0.080264
40	9 deg.	0.15692	79	4 deg. 33 min.	0.0791
41	8 deg. 46 min.	0.15286	80	4 deg. 30 min.	0.078518

(*Continued on following page*)

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Table for Division of Circles—(Continued from page 1182)

Number of Divisions in Circumference	Angle of Each Division in Degrees and Minutes	Length of Chord for Each Division (for Radius = 1)	Number of Divisions in Circumference	Angle of Each Division in Degrees and Minutes	Length of Chord for Each Division (for Radius = 1)
81	4 deg. 26 min.	0.077356	91	3 deg. 57 min.	0.0686362
82	4 deg. 23 min.	0.076194	92	3 deg. 54 min.	0.0680546
83	4 deg. 20 min.	0.075612	93	3 deg. 52 min.	0.0674732
84	4 deg. 17 min.	0.07445	94	3 deg. 49 min.	0.0663104
85	4 deg. 14 min.	0.073868	95	3 deg. 47 min.	0.0657288
86	4 deg. 11 min.	0.072706	96	3 deg. 45 min.	0.0651474
87	4 deg. 8 min.	0.072124	97	3 deg. 42 min.	0.064566
88	4 deg. 5 min.	0.070962	98	3 deg. 40 min.	0.0639844
89	4 deg. 2 min.	0.07038	99	3 deg. 38 min.	0.063403
90	4 deg.	0.069798	100	3 deg. 36 min.	0.0628216

This table should be useful for gear and chain wheel calculation and design.

$$\text{Length of arc of } a \text{ degrees} = 2r\pi\frac{a}{360} = \frac{d\pi a}{360}$$

$$\text{Area of sector of } a \text{ degrees} = r^2\pi\frac{a}{360} = \frac{d^2 \times 0.7854\, d^2 a}{360}$$

Decimal Equivalents of Sixty-Fourths

To convert common fraction into decimal fraction, give the numerator decimal form by adding a period and ciphers. Then divide by denominator.

1/64 = .0156	17/64 = .2656	33/64 = .5156	49/64 = .7656
1/32 = .0312	9/32 = .2812	17/32 = .5312	25/32 = .7812
3/64 = .0468	19/64 = .2968	35/64 = .5468	51/64 = .7968
1/16 = .0625	5/16 = .3125	9/16 = .5625	13/16 = .8125
5/64 = .0781	21/64 = .3281	37/64 = .5781	53/64 = .8281
3/32 = .0937	11/32 = .3437	19/32 = .5937	27/32 = .8437
7/64 = .1093	23/64 = .3593	39/64 = .6093	55/64 = .8593
1/8 = .1250	3/8 = .3750	5/8 = .6250	7/8 = .8750
9/64 = .1406	25/64 = .3906	41/64 = .6406	57/64 = .8906
5/32 = .1562	13/32 = .4062	21/32 = .6562	29/32 = .9062
11/64 = .1718	27/64 = .4218	43/64 = .6718	59/64 = .9218
3/16 = .1875	7/16 = .4375	11/16 = .6875	15/16 = .9375
13/64 = .2031	29/64 = .4531	45/64 = .7031	61/64 = .9531
7/32 = .2187	15/32 = .4687	23/32 = .7187	31/32 = .9687
15/64 = .2343	31/64 = .4843	47/64 = .7343	63/64 = .9843
1/4 = .2500	1/2 = .5000	3/4 = .7500	1 = 1.0000

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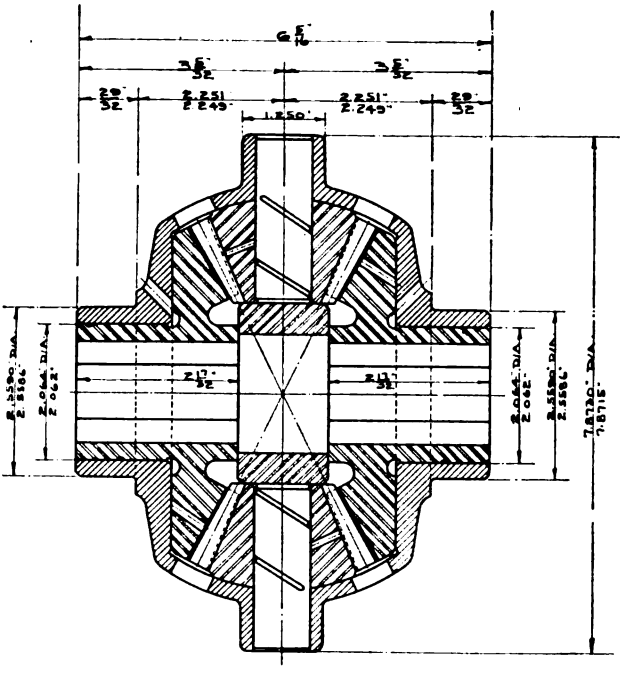

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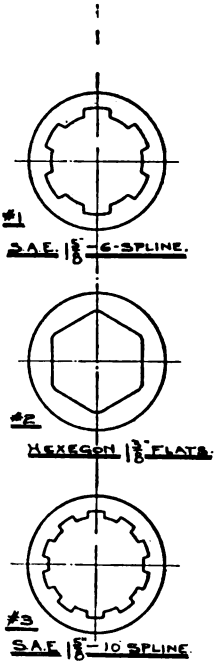

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Decimal Fractions of a Linear Inch in Millimetres

Inch	Millimetres	Inch	Millimetres	Inch	Millimetres	Inches	Millimetres
.01	.254	.29	7.366	.57	14.478	.85	21.590
.02	.508	.30	7.620	.58	14.732	.86	21.844
.03	.762	.31	7.874	.59	14.986	.87	22.098
.04	1.016	.32	8.128	.60	15.240	.88	22.352
.05	1.270	.33	8.382	.61	15.494	.89	22.606
.06	1.524	.34	8.636	.62	15.748	.90	22.860
.07	1.778	.35	8.890	.63	16.002	.91	23.114
.08	2.032	.36	9.114	.64	16.256	.92	23.368
.09	2.286	.37	9.398	.65	16.510	.93	23.622
.10	2.540	.38	9.652	.66	16.764	.94	23.876
.11	2.794	.39	9.906	.67	17.018	.95	24.130
.12	3.048	.40	10.160	.68	17.272	.96	24.384
.13	3.302	.41	10.414	.69	17.526	.97	24.638
.14	3.556	.42	10.668	.70	17.780	.98	24.892
.15	3.810	.43	10.922	.71	18.034	.99	25.146
.16	4.064	.44	11.176	.72	18.288	1.00	25.400
.17	4.318	.45	11.430	.73	18.542	2.00	50.799
.18	4.572	.46	11.684	.74	18.796	3.00	76.199
.19	4.826	.47	11.938	.75	19.050	4.00	101.598
.20	5.080	.48	12.192	.76	19.304	5.00	126.998
.21	5.334	.49	12.446	.77	19.558	6.00	152.397
.22	5.588	.50	12.700	.78	19.812	7.00	177.797
.23	5.842	.51	12.945	.79	20.066	8.00	203.196
.24	6.096	.52	13.208	.80	20.320	9.00	228.596
.25	6.350	.53	13.462	.81	20.574	10.00	253.995
.26	6.604	.54	13.716	.82	20.828	11.00	279.395
.27	6.858	.55	13.970	.83	21.082	12.00	304.794
.28	7.112	.56	14.224	.84	21.336	1 foot	

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United States Official Millimeters Conversion Table

Millimeters	Equivalent in Inches	Millimeters	Equivalent in Inches
1	0.03937	51	2.00787
2	0.07874	52	2.04724
3	0.11811	53	2.08661
4	0.15748	54	2.12598
5	0.19685	55	2.16535
6	0.23622	56	2.20472
7	0.27559	57	2.24409
8	0.31496	58	2.28346
9	0.35433	59	2.32283
10	0.39370	60	2.36220
11	0.43307	61	2.40157
12	0.47244	62	2.44094
13	0.51181	63	2.48031
14	0.55118	64	2.51968
15	0.59055	65	2.55905
16	0.62992	66	2.59842
17	0.66929	67	2.63779
18	0.70866	68	2.67716
19	0.74803	69	2.71653
20	0.78740	70	2.75590
21	0.82677	71	2.79527
22	0.86614	72	2.83464
23	0.90551	73	2.87401
24	0.94488	74	2.91338
25	0.98425	75	2.95275
26	1.02362	76	2.99212
27	1.06299	77	3.03149
28	1.10236	78	3.07086
29	1.14173	79	3.11023
30	1.18110	80	3.14960
31	1.22047	81	3.18897
32	1.25984	82	3.22834
33	1.29921	83	3.26771
34	1.33858	84	3.30708
35	1.37795	85	3.34645
36	1.41732	86	3.38582
37	1.45669	87	3.42519
38	1.49606	88	3.46456
39	1.53543	89	3.50393
40	1.57480	90	3.54330
41	1.61417	91	3.58267
42	1.65354	92	3.62204
43	1.69291	93	3.66141
44	1.73228	94	3.70078
45	1.77165	95	3.74015
46	1.81102	96	3.77952
47	1.85039	97	3.81889
48	1.88976	98	3.85826
49	1.92913	99	3.89763
50	1.96850	100	3.93700

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34 x 3½	10.80	35 x 4½	16.70
31 x 4	11.55	36 x 4½	16.93
32 x 4	11.95	37 x 4½	19.25
33 x 4	12.18	35 x 5	19.52
34 x 4	12.54	37 x 5	19.66

Our repeat orders have been so great that we can confidently say that our tires are giving exceptional service, and a trial order will convince you that we are offering the best tire value you ever received. A deposit of 20% required on all orders and balance C. O. D.

American Retreading Corp.
135-139 Everett Ave.
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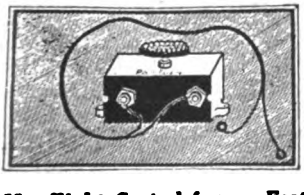
MAKE NIGHT RIDING SAFE
BY EQUIPPING YOUR CAR WITH

The Auto Headlight Glare Remover

Simple to Operate—Easy to Install



100% Light
Safe
Convenient
Instantaneous
Reliable

Headlight Control from a Foot Button Glareless in Traffic

FOR ALL MAKES OF CARS

Price, Ready to Install, $3.50

DEALERS AND GARAGEMEN:

This new invention is sure to revolutionize night driving—turning a task into a delight. It is sure to be a quick and fast seller. Get our liberal proposition to the trade. Order from our jobber; if he cannot supply you, write us and send us his name.

Auto Glare Remover Co., Inc.
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Plates
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Top Connectors
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Jars
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Vent Plugs
Separators

Other Service Station Equipment

Liberal Discount to Jobbers and Service Stations

American Storage Battery Parts Co.
650-660 East 163rd St., Cleveland, Ohio

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Kilograms per Square Centimeter in Pounds per Square Inch and Vice Versa

To convert kilograms per square centimeter into pounds per square inch, multiply by 14.223. Oppositely, divide pounds per square inch by 14.223 to convert into kilograms per square centimeter.

Lbs. per Square Inch	Kilograms per Square Centimeter	Lbs. per Square Inch	Kilograms per Square Centimeter	Lbs. per Square Inch	Kilograms per Square Centimeter	Lbs. per Square Inch	Kilograms per Square Centimeter
1	.0703	41	2.8826	81	5.6949	205	14.4129
2	.1406	42	2.9529	82	5.7652	210	14.7645
3	.2109	43	3.0232	83	5.8355	215	15.1160
4	.2812	44	3.0935	84	5.9058	220	15.4675
5	.3515	45	3.1638	85	5.9761	225	15.8191
6	.4218	46	3.2341	86	6.0464	230	16.1706
7	.4921	47	3.3044	87	6.1167	235	16.5221
8	.5624	48	3.3747	88	6.1870	240	16.8737
9	.6328	49	3.4450	89	6.2573	245	17.2252
10	.7031	50	3.5153	90	6.3276	250	17.5767
11	.7734	51	3.5856	91	6.3979	255	17.9283
12	.8437	52	3.6559	92	6.4682	260	18.2798
13	.9140	53	3.7263	93	6.5385	265	18.6313
14	.9843	54	3.7966	94	6.6088	270	18.9829
15	1.0546	55	3.8669	95	6.6722	275	19.3344
16	1.1249	56	3.9372	96	6.7495	280	19.6860
17	1.1952	57	4.0075	97	6.8198	285	20.0375
18	1.2655	58	4.0778	98	6.8901	290	20.3890
19	1.3358	59	4.1481	99	6.9604	295	20.7406
20	1.4062	60	4.2184	100	7.0307	300	21.0921
21	1.4764	61	4.2887	105	7.3822	310	21.7951
22	1.5467	62	4.3590	110	7.7338	320	22.4981
23	1.6171	63	4.4293	115	8.0853	330	23.2012
24	1.6874	64	4.4996	120	8.4368	340	23.9043
25	1.7577	65	4.5699	125	8.7884	350	24.6073
26	1.8280	66	4.6402	130	9.1399	360	25.3104
27	1.8983	67	4.7106	135	9.4914	370	26.0135
28	1.9686	68	4.7809	140	9.8430	380	26.7166
29	2.0389	69	4.8512	145	10.1945	390	27.4196
30	2.1092	70	4.9215	150	10.5460	400	28.1227
31	2.1795	71	4.9918	155	10.8976	410	28.8258
32	2.2498	72	5.0621	160	11.2491	420	29.5288
33	2.3201	73	5.1324	165	11.6006	430	30.2319
34	2.3905	74	5.2027	170	11.9522	440	30.9350
35	2.4607	75	5.2730	175	12.3037	450	31.6380
36	2.5310	76	5.3433	180	12.6553	460	32.3411
37	2.6013	77	5.4136	185	13.0068	470	33.0442
38	2.6717	78	5.4939	190	13.3583	480	33.7437
39	2.7420	79	5.5542	195	13.7099	490	34.4503
40	2.8123	80	5.6246	200	14.0614	500	35.1533

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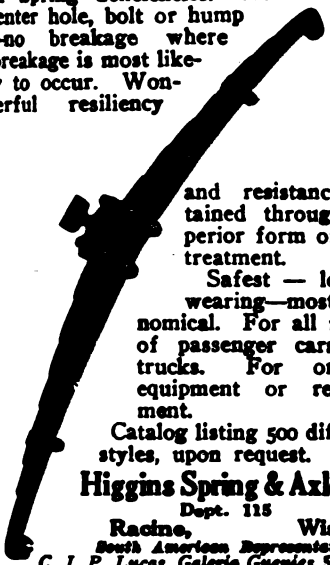
Higgins Quality Springs

For all Passenger Cars and Trucks

New type of construction. Eliminates all Spring deficiencies. No center hole, bolt or hump —no breakage where breakage is most likely to occur. Wonderful resiliency



and resistance attained through superior form of heat treatment.

Safest — longest wearing—most economical. For all makes of passenger cars and trucks. For original equipment or replacement.

Catalog listing 500 different styles, upon request.

Higgins Spring & Axle Co.
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BEST QUALITY — CORRECT QUANTITY — TRADE — FERRO'S — MARK — CAREFUL CONSTRUCTION — DEPENDABLE PRODUCTION — CHICAGO

STEERING WHEEL LOCKS
IGNITION HARNESS—for Fords
SPARK PLUG WIRES—for Fords
IGNITION TIMERS—for Fords
EXTENSION LIGHT CORDS
PORTABLE GARAGE LAMPS
AUTO REPAIR CREEPERS
COTTON WASTE
REPAIR ASSORTMENTS
Consisting of Lock Washers, Cotter Pins, Terminal Assortments, etc.

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2011 Michigan Ave. Chicago, Ill.

"HEATH"

Makes Storage Battery Separators

EXCLUSIVELY

THE making of storage battery separators has become a science just like everything else.
The jack of all trades is no longer a factor in business — today it's the man who concentrates his entire energies upon one thing, who produces something so superior that it stands out from the crowd.
Our specializing exclusively in the manufacturing of storage battery separators has made the name of "HEATH" stand for a definite quality IN STORAGE BATTERY INSULATORS.
So, for your own protection be sure and specify "HEATH" the next time you order.

HEATH MANUFACTURING CO.
GREENVILLE MICHIGAN

The "Big Ben" of Motordom
HARRIS LO-PRESSURE

TIRELARM

The motor world heralds the advent of a new accessory that is destined for a notable career.

A precision instrument that goes on the valve stem like a dust cap affording a VISIBLE, AUDIBLE SIGNAL when the air in the tire becomes 10 or 12 pounds lower than the predetermined pressure.

It is the most important invention of the times and will find ready sale wherever shown.

Now ready for marketing through jobbers and dealers. Attractive sales literature, window cards, counter display stands and dealer helps supplied. Write for complete information.

HARRIS ACCESSORY CO.
Manufacturers and Distributors
Greenville, South Carolina

It Saves Tires

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Units of Weight and Measure

(From Circular No. 47 of Bureau of Standards, Department of Commerce, Washington)

THE METRIC SYSTEM: Metric units are naturally related. For example: 1 cubic decimeter equals for all practical purposes 1 liter, and 1 liter of water weighs 1 kilogram. The metric terms are formed by combining the words "metre," "gram" and "liter" with the six numerical prefixes, as in the following table:

Prefixes	Meaning		Units
milli- = one-thousandth	$\frac{1}{1000}$	.001	
centi- = one-hundredth	$\frac{1}{100}$	.01	"meter" for length
deci- = one-tenth	$\frac{1}{10}$	.1	"gram" for weight or mass
Unit = one		1	
deka- = ten	$\frac{10}{1}$	10	
hecto- = one hundred	$\frac{100}{1}$	100	"liter" for capacity
kilo = one thousand	$\frac{1000}{1}$	1000	

Definitions of Units

The following lists of units include most of those in general use. Simple conversions may be made from the values here given more readily than from the "Simple and Compound Conversions of Weights, Measures and Money Values" on page 1156, and units not included in the latter may be found here and used. For example, if a conversion into nautical miles is wanted, the conversion factor for statute mile given in the conversion tables may be used by multiplying it by the factor 1.151 553 here given to show relation of nautical mile to statute mile.

LENGTH

FUNDAMENTAL UNITS

A meter (m) is a unit of length equivalent to the distance between the defining lines on the international prototype meter at the International Bureau of Weights and Measures when this standard is at the temperature of melting ice (0°C.). 1 m. = $^{3937}/_{3600}$ yd.

A yard (yd.) is a unit of length equivalent to $^{3600}/_{3937}$ of a meter.

(*Continued on page* 1200)

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Your Business

as it relates to

Our Job

If you manufacture or sell automotive products to car, truck or tractor makers—

If you distribute your merchandise thru jobber, dealer and garage owner channels—

If you want to reach the buyers of high and low degree throughout industry and trade—

the combined advantage of this Red Automobile Trade Directory and our special Mailing List Service will render you an advantage that is as economical and practical as it is unique.

Our Special Mailing List Service Includes:

(1) Manufacturers of cars, trucks, tractors, airplanes and motorcycles with names of all company executives, including engineers, purchasing agents, etc.

(2) Names of more than 1500 concerns interested in the wholesaling of automotive equipment—showing territory covered, the number of road salesmen, amount of stock carried, whether catalog is issued, name of manager, name of buyer, etc.

(3) A list of more than 60,000 of the country's best dealers and garage owners, with information as to cars, trucks and tractors handled; whether they sell supplies, operate repair shop, etc.

This special Mailing List Service is invaluable to sales managers, service managers and other executives who are concerned with merchandising and maintenance. For those manufacturers who plan any "direct-by-mail" advertising it will prove so good as to justify the thousands of dollars annually spent by us to keep our special Mailing List Service the very best possible to obtain.

If you want complete details they will be sent promptly if you request. Just address:

The Automobile Trade Directory

243 West 39th St., New York City

910 South Michigan Ave.....Chicago
Leader News Building.....Cleveland
Kresge Building.....Detroit
Otis Building.....Philadelphia
Title Insurance Bldg.....Los Angeles
Pacific Building.....San Francisco

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HIGHER AND LOWER UNITS

1 kilometer (km) = 1000 meters.
1 hectometer (hm) = 100 meters.
1 dekameter (dkm) = 10 meters.
1 decimeter (dm) = 0.1 meter.
1 centimeter (cm) = 0.01 meter.
1 millimeter (mm) = 0.001 meter = 0.1 centimeter.
1 micron (μ) = 0.000 001 meter = 0.001 millimeter.
1 millimicron (mμ) = 0.000 000 001 meter = 0.001 micron.
1 foot (ft.) = ⅓ yard = $^{1200}/_{3937}$ meter.
1 inch (in.) = $^{1}/_{36}$ yard = $^{1}/_{12}$ foot = $^{100}/_{3937}$ meter.
1 link (li.) = 0.22 yard = 7.92 inches.
1 rod (rd.) = 5½ yards = 16½ feet.
1 chain (ch.) = 22 yards = 100 links = 66 feet = 4 rods.
1 furlong (fur.) = 220 yards = 40 rods = 10 chains.
1 statute mile (mi.) = 1760 yards = 5280 feet = 320 rods.
1 hand = 4 inches.
1 point = $^{1}/_{72}$ inch.
1 mil = 0.001 inch.
1 fathom = 6 feet.
1 span = 9 inches = ¼ fathom.
1 nautical mile
1 seal mile
1 geographical mile } United States = 6080.20 feet = 1.151 553 statute miles = 1853.249 meters.

AREA

FUNDAMENTAL UNITS

A square meter (m^2) = 1.195985 sq. yd.
A square yard (sq. yd.) = 0.8361307 m^2.

HIGHER AND LOWER UNITS

1 square kilometer (km^2) = 1 000 000 square meters.
1 hectare (ha) or square hectometer (hm^2) = 10 000 square meters.
1 are (a), or square dekameter (dkm^2) = 100 square meters.
1 centare (ca) = 1 square meter.
1 square decimeter (dm^2) = 0.01 square meter.
1 square centimeter (cm^2) = 0.0001 square meter.
1 square millimeter (mm^2) = 0.000 001 square meter = 0.01 square centimeter.
1 square foot (sq. ft.) = ⅑ square yard.
1 square inch (sq. in.) = $^{1}/_{1296}$ square yard = $^{1}/_{144}$ square foot.
1 square link (sq.li.) = 0.0484 square yard = 62.7264 square inches.
1 square rod (sq. rd.) = 30.25 square yards = 272.25 square feet = 625 square links.
1 square chain (sq. ch.) = 484 square yards = 16 square rods = 100 000 square links.
1 acre (A.) = 4840 square yards = 160 square rods = 10 square chains.
1 square mile (sq. mi.) = 3 097 600 square yards = 640 acres.

VOLUME

FUNDAMENTAL UNITS

A cubic meter (m^3) = 1.307 9428 cu. yd.
A cubic yard (cu. yd.) = 017645594 m^3.

HIGHER AND LOWER UNITS

1 cubic kilometer (km^3) = 1 000 000 000 cubic meters.
1 cubic hectometer (hm^3) = 1 000 000 cubic meters.
1 cubic dekameter (dkm^3) = 1000 cubic meters.
1 stere (s) = 1 cubic meter
1 cubic decimeter (dm^3) = 0.001 cubic meter.
1 cubic centimeter (cm^3) = 0.000 001 cubic meter = 0.001 cubic decimeter.
1 cubic millimeter (mm^3) = 0.000 000 001 cubic meter = 0.001 cubic centimeter.
1 cubic foot (cu. ft.) = $^{1}/_{27}$ cubic yard.
1 cubic inch (cu. in.) = $^{1}/_{46656}$ cubic yard = $^{1}/_{1728}$ cubic foot.
1 board foot = 144 cubic inches $^{1}/_{12}$ = cubic foot.
1 cord (cd.) = 128 cubic feet.

(Continued on following page)

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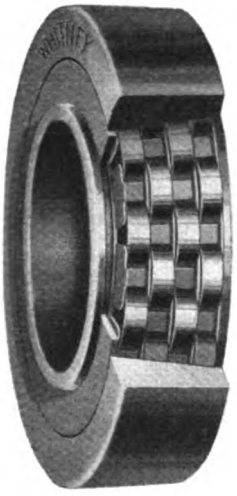
WHITNEY
(PARALLEL)
ROLLER BEARINGS



Some Exclusive and Incomparable Features Distinctive of the Whitney (Parallel) Roller Bearing

The Keystone principle, as applied to roller bearings, transmit all loads, either thrust or side, directly to the face of the rollers only, as well as vertical to their axis constitutes the most recent development in modern anti-friction roller bearings guaranteeing possibilities never before realized.

The old and famous Keystone principle is employed and thoroughly practical.
The parallel roller principle is a fundamental factor.
Greater speed under a heavy load is possible.
Cage friction is reduced to negligible quantity.
May be safely guaranteed during the life of any car.
The rollers have no tendency to work out from under the load.
All of the rollers are in contact with the bearing members all of the time.
Self-adjustment is safe, perfectly accurate and automatic at all times.
The load never touches the ends of the rollers.
The rollers have no tendency to work endwise under a load.
All the load rests on the cylindrical face of the rollers only, vertical to the axis of the rollers.
The rollers cannot jam, wedge or get locked.

Roller Assembly

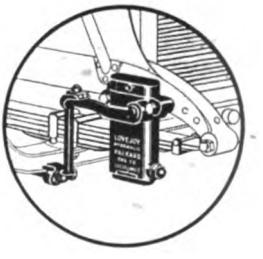
Complete Data Upon Request

WHITNEY BEARING CORPORATION

CHICAGO, 536 LAKE SHORE DRIVE ILLINOIS

Why Dealers Should Sell LOVEJOY HYDRAULIC Shock Absorbers

They eliminate all side sway.
They give equal comfort with one passenger or seven.
They do not require periodic repairs or attention.
They never require lubrication or adjustment.
They are sealed to keep oil in and dirt out.
They are silent and inconspicuous.
You can sell on the basis of an absolute guarantee. We stand behind you.
Price per set of four, with all attachments, $115 F. O. B. Cleveland. Generous discounts to dealers. Additional charge for installing. In ordering, specify make and model of car.



They last as long as your car—and make your car last longer

THE PACKARD ENGINEERING CO., 1824 Euclid Ave., Cleveland

The following distributors are prepared to give you complete service on Lovejoy Hydraulic Shock Absorbers:

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Lovejoy Mfg. Co.
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Boston, Mass.

Clark Equipment Co.
1755 Broadway
New York City

D. & W. Sales Company
1471 Main St.
Buffalo, N. Y.

Inventors' Products Co.
141 N. Fourth St.
Columbus, Ohio

H. Wilcox Sales Company
648 N. Meridian Ave.
Indianapolis, Ind.

Simon Bros.
3542 So. Michigan Ave.
Chicago, Ill.

Rollin Berry Blair
632 St. Joseph St.
New Orleans, La.

Lovejoy Sales Co.
1001 Main St.
Jacksonville, Fla.

Scranton Motor Car Co.
430 Dix Court
Scranton, Pa.

United Motor Products Co.
1805 Grand Ave.
Kansas City, Mo.

Henry E. Schmidt
1529 Eleventh Ave.
Seattle, Wash.

Ruben Supply Co.
5th Ave. & Walnut St.
McKeesport, Pa.

Black Frasier Motor Car Co.
Charleston, S. C.

Rea Motor Co.
Fort Worth, Tex.

Gramm Bernstein Motor Sales Co.
5872 Ellsworth Ave.
Pittsburgh, Pa.

Park Road Sales & Service Co.
Casper, Wyo.

George Gimera
65 Walker Ave.
Bradford, Pa.

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CAPACITY

FUNDAMENTAL UNITS

A liter (l) is a unit of capacity equivalent to the volume occupied by the mass of 1 kilogram of pure water at its maximum density (at a temperature of 4° C. practically) and under the standard atmospheric pressure of 760 mm). It is equivalent in volume to 1.000 027 cubic decimeters. One l = 0.264168 gal.

A gallon (gal.) is a unit of capacity equivalent to the volume of 231 cubic inches. It is used for the measurement of liquid commodities only. 1 gal. = 3.785 332 liter. A British gallon is approximately 20 per cent larger.

A bushel (bu.) is a unit of capacity equivalent to the volume of 2150.42 cubic inches. It is used in the measurement of dry commodities only. The bushel is the so-called stricken or struck bushel. Many dry commodities are sold by heaped bushel, which is generally specified in the State Laws to be the usual stricken bushel measure "duly heaped in the form of a cone as high as the article will admit" or "heaped as high as may be without special effort or design." The heaped bushel was originally intended to be 25 per cent greater than the bushel.
A British bushel is 3 per cent larger.

HIGHER AND LOWER UNITS

1 hectoliter (hl) = 100 liters.
1 dekaliter (dkl) = 10 liters.
1 deciliter (dl) = 0.1 liter.
1 centiliter (cl) = 0.01 liter.
1 milliliter (ml) = 0.001 liter = 1.000 027 cubic centimeters.
1 liquid quart (liq. qt.) = ¼ gallon = 57.75 cubic inches.
1 liquid pint (liq. pt.) = ⅛ gallon = ½ liquid quart = 28.875 cubic inches.
1 gill (gi.) = 1/32 gallon = ¼ liquid pint = 7.21875 cubic inches.
1 fluid ounce (fl. oz.) = 1/128 gallon = 1/16 liquid pint.
1 fluid dram (fl. dr.) = ⅛ fluid ounce = 1/128 liquid pint.
1 minim (min. or ♏) = 1/60 fluid dram = 1/480 fluid ounce.
1 firkin = 9 gallons.
1 peck (pk.) = ¼ bushel = 537.605 cubic inches.
1 dry quart (dry qt.) = 1/32 bushel = ⅛ peck = 67.200 625 cubic inches.
1 dry pint (dry pt.) = 1/64 bushel = ½ dry quart = 33.600312 5 cubic inches.
1 barrel (for fruit, vegetables and other dry commodities) = 7056 cubic inches = 105 dry quarts. (By U. S. Statute, March 4, 1915.)

MASS OR WEIGHT

FUNDAMENTAL UNITS

A kilogram (kg) is a unit of mass equivalent to the mass of the international prototype kilogram at the International Bureau of Weights and Measures. One kg. = 2.204 622 341 lb. av.
An avoirdupois pound (lb. av.) = 0.453 592 427 7 kilogram.
A gram (g) is a unit of mass equivalent to one-thousandth of the mass of the international prototype kilogram at the International Bureau of Weights and Measures.
A troy pound (lb. t.) is a unit of mass equivalent to 5760/7000 of that of the avoirdupois pound.

HIGHER AND LOWER UNITS

1 metric ton (t) = 1000 kilograms.
1 hectogram (hg) = 100 grams = 0.1 kilogram.
1 dekagram (dkg) = 10 grams = 0.01 kilogram.
1 decigram (dg) = 0.1 gram.
1 centigram (cg) = 0.01 gram.
1 milligram (mg) = 0.001 gram.
1 avoirdupois ounce (oz. av.) = 1/16 avoirdupois pound.
1 avoirdupois dram (dr. av.) = 1/256 avoirdupois pound = 1/16 avoirdupois ounce.
1 grain (gr.) = 1/7000 avoirdupois pound = 10/437.5 avoirdupois ounce = 1/5760 troy pound.
1 apothecaries' pound (lb. ap.) = 1 troy pound = 5760/7000 avoirdupois pound.
1 apothecaries' or troy ounce (oz. ap. or ℥, or oz. t.) = 1/12 troy pound = 480/7000 avoirdupois pound = 480 grains.
1 apothecaries' dram (dr. ap. or ʒ) = 1/96 apothecaries' pound = ⅛ apothecaries' ounce = 60 grains.
1 pennyweight (dwt.) = 1/20 troy ounce = 24 grains.
1 apothecaries' scruple (s. ap. or ℈) = ½ apothecaries' dram = 20 grains.
1 metric carat (c) = 200 milligrams = 0.2 gram.
The old carat in use in this country previous to July 1, 1913, was of 205.3 milligrams.
1 short hundredweight (sh. cwt.) = 100 avoirdupois pounds.
1 long hundredweight (l. cwt.) = 112 avoirdupois pounds.
1 short ton (sh. tn.) = 2000 avoirdupois pounds.
1 long ton (l. tn.) = 2240 avoirdupois pounds.

(*Continued on page* 1204)

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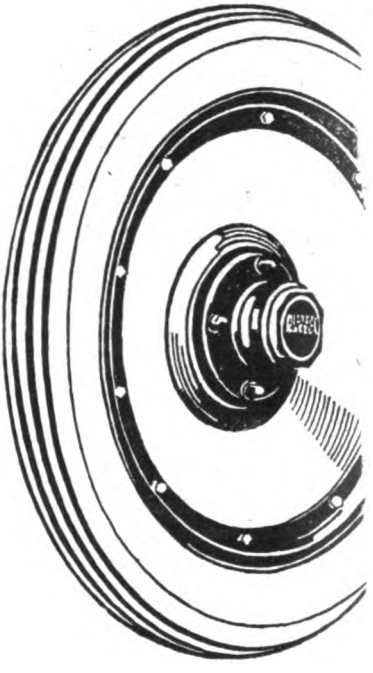
DISTEEL WHEELS

The Wheels that Complete the Car

When you see a car with wheels that don't wobble, you know they're Disteel Wheels. By holding the tires firm and true Disteel Wheels save tires and gasoline and prolong the life of your car.

The inwardly Curved Wheel is the Disteel Wheel.



DISTEEL WHEEL CORPORATION

DETROIT, U. S. A.

Disteel wheels are manufactured exclusively by the Detroit Pressed Steel Company at their new plant, Cabot Avenue, Detroit.

The Mount Elliott plant is devoted entirely to the making of pressed steel frames for the automotive industry. Correspondence is invited from quantity manufacturers of passenger cars, trucks, tractors and trailers.

Send Your Blue Prints to Us or Let Us Send a Representative to You

DETROIT PRESSED STEEL COMPANY

DETROIT, U. S. A.

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Spelling and Abbreviation of Units

Following the names of each unit in the list below is given the abbreviation which the Bureau has adopted. Attention is particularly called to the following principles:

1. The period is omitted after the abbreviations of the metric units, while it is used after those of the customary system.

2. The exponents "2" and "3" are used to signify area and volume, respectively, in the case of the metric units instead of the longer prefixes "sq" or "cu." In conformity with this principle the abbreviation for cubic centimeter is "cm^3," instead of "c.c." or "c.m." The term "cubic centimeter" as used in chemical work is, in fact, a misnomer, since the unit actually used is the "milliliter," which has a slightly larger volume.

3. The use of the same abbreviation for both singular and plural is recommended. This practice is already established in expressing metric units and is in accordance with the spirit and chief purpose of abbreviations.

4. It is also suggested that, unless all the text is printed in capital letters, only small letters be used for abbreviations except in the case of A. for acre, where the use of the capital letter is general.

ABBREVIATIONS FOR TERMS OF WEIGHT AND MEASURE

Unit	Abbreviation	Unit	Abbreviation	Unit	Abbreviation
acre	A.	dram, avoirdupois	dr. av.	ounce, avoirdupois	oz. av.
are	a	dram, fluid	fl. dr.	ounce, fluid	fl. oz.
avoirdupois	av.	fathom	fath.	ounce, troy	oz. t.
barrel	bbl.	foot	ft.	peck	pk.
board foot	bd. ft.	firkin	fir.	pennyweight	dwt.
bushel	bu.	furlong	fur.	pint	pt.
carat, metric	c	gallon	gal.	pound	lb.
centare	ca	grain	gr.	pound, apothecaries'	lb. ap.
centigram	cg	gram	g.	pound, avoirdupois	lb. av.
centiliter	cl	hectare	ha	pound, troy	lb. t.
centimeter	cm	hectogram	hg	quart	qt.
chain	ch.	hectoliter	hl	rod	rd.
cubic centimeter	cm^3	hectometer	hm	scruple, apothecaries'	s.ap. or ℈
cubic decimeter	dm^3	hogshead	hhd.	square centimeter	cm^2
cubic dekameter	dkm^3	hundredweight	cwt.	square chain	sq. ch.
cubic foot	cu. ft.	inch	in.	square decimeter	dm^2
cubic hectometer	hm^3	kilogram	kg	square dekameter	dkm^2
cubic inch	cu. in.	kiloliter	kl	square foot	sq. ft.
cubic kilometer	km^3	kilometer	km	square hectometer	hm^2
cubic meter	m^3	link	li.	square inch	sq. in.
cubic mile	cu. mi.	liquid	liq.	square kilometer	km^2
cubic millimeter	mm^3	liter	l	square meter	m^2
cubic yard	cu. yd.	meter	m	square mile	sq. mi.
decigram	dg	metric ton	t	square millimeter	mm^2
deciliter	dl	micron	μ	square rod	sq. rd.
decimeter	dm	mile	mi.	square yard	sq. yd.
decistere	ds	milligram	mg	stere	s
dekagram	dkg	milliliter	ml	ton	tn.
dekaliter	dkl	millimeter	mm	ton, metric	t
dekameter	dkm	millimicron	mμ	troy	t.
dekastere	dks	minim	min. or ♏	yard	yd.
dram, apothecaries'	dr. ap. or ʒ	ounce	oz.		
		ounce, apothecaries'	oz. ap or ℥		

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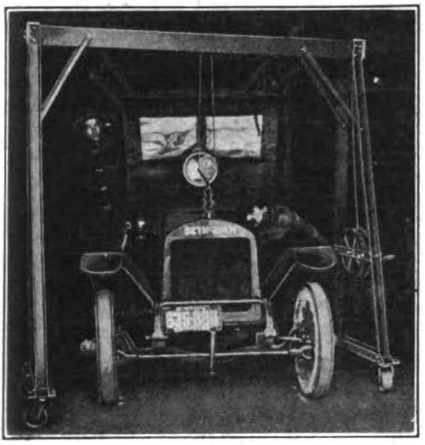

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Simple and Compound Conversions of Weights, Measures and Money Values

By Marius C. Krarup

The figures in the conversion tables on page 1210 are taken from Circular No. 47 of the Bureau of Standards, Department of Commerce, Washington, D. C. The special arrangement of the figures is devised so that users of this Automobile Directory may have in one place all the data required for simple and compound conversions, no other figuring being necessary than simple multiplication and division (though logarithms can be used to advantage if desired). The underlying idea is that it is usually much easier to figure a little than to find a table of equivalents in which the figuring is done. Also, that tables for compound conversions include only a few of the numerous compound conversions that may be demanded, and that all tables of ready-figured values leave gaps which must be figured anyway.

In the appended tables a conversion figure is established for every unit, and by this simple means all conversions become possible from very few data.

(Rule for multiplying with decimals: If one factor has m decimals and the other factor has n decimals, multiply without regard for decimal point and place it in the product $m+n$ places from the right.

(Rule for division with decimals: If divisor has m decimals, move decimal point m places to the right in both figures. Place decimal point in quotient when it is reached in the division.)

For most practical purposes, the decimals may be cut down to three or four, greatly abbreviating the figuring.

HOW TO USE THE CONVERSION TABLES

For a simple conversion such as: How many bushels are 606 hectoliters? We have

$$x \text{ bushels} = 606 \text{ hectoliters}$$

For bushels and hectoliters substitute their conversion figure. Then we have

$$x \times 35.2383 = 606 \times 100 \text{ and}$$

$$x = \frac{60600}{35.2383} = 1719.718 \text{ bushels}$$

Example: How many kilograms does 4 liters weigh when 0.3 liquid quart weighs 7 lb. av.? We have the ordinary equation by "rule of three" that

$$\frac{\times \text{ kg.}}{4 \text{ liters}} = \frac{7 \text{ lb. av.}}{0.3 \text{ qt.}}$$

Now the simple rule is: Replace the names of the units by their respective conversion factors The above equation then becomes:

$$\frac{x \times 1}{4 \times 1} = \frac{7 \times 0.4535924277}{0.3 \times 0.946333}$$

or, simplified by cutting down the decimals:

$$\frac{x}{4} = \frac{7 \times 0.45359}{0.3 \times 0.94633} \text{ or } x \text{ (kg.)} = \frac{4 \times 7 \times 0.45359}{0.3 \times 0.94633} = \mathbf{44.735 \text{ kg.}}$$

Example 2: If 4 British gallons cost 2£ 7 sh., what is 5 gallons worth in American money? We have

$$\frac{x \text{ dollars}}{5 \text{ gal.}} = \frac{2£\ 7 \text{ sh.}}{4 \text{ British gal.}}$$

We do not find British gallons in the conversion tables, but by looking under "Units of Weight and Measure" on page 1196 we see that a British gallon is 20 per cent larger than the American gallon. So for "British" we use the factor 1.20. The equation then becomes:

$$\frac{x \times 1}{5 \times 3.785332} = \frac{(2 \times 4.8665) + (7 \times 0.2433)}{4 \times 1.20 \times 3.785332}$$

or, simplified by crossing out the repeated conversion factor for "gallon":

$$\frac{x}{5} = \frac{(2 \times 4.8665) + (7 \times 0.2433)}{4 \times 1.20}$$

$$\text{and } x \text{ dollars} = \frac{48.665 + (35 \times 0.2433)}{4.80} = \$11.91$$

(*Continued on following page*)

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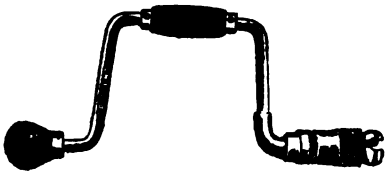

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Conversion Tables

See page 1208 for directions in using these tables for simple or compound conversions.

Length

Units		Meters
1 inch	=	0.025 400 05
1 link	=	0.201 168 4
1 foot	=	0.304 800 6
1 yard	=	0.914 401 8
1 rod	=	5.029 210
1 chain	=	20.116 84
1 mile	=	1609.3472
1 centimeter	=	0.01
1 meter	=	1

Area

Units		Square Meters
1 square inch	=	0.000 645 162 6
1 square link	=	0.040 468 73
1 square foot	=	0.092 903 41
1 square yard	=	0.836 130 7
1 square rod	=	25.292 95
1 square chain	=	404.6873
1 acre	=	4046.873
1 square mile	=	2 589 998.000
1 square centimeter	=	0.0001
1 square meter	=	1
1 hectare	=	10 000.000

Volume

Units		Cubic Meters
1 cubic inch	=	0.000 016 387 16
1 cubic foot	=	0.028 317 016
1 cubic yard	=	0.764 559 4
1 cubic centimeter	=	0.000 001
1 cubic decimeter	=	0.001
1 cubic meter	=	1

Capacity, Liquid

Units		Liters
1 minim	=	0.000 061 610 2
1 fluid dram	=	0.003 696 61
1 fluid ounce	=	0.029 572 9
1 gill	=	0.118 292
1 liquid pint	=	0.473 167
1 liquid quart	=	0.946 333
1 gallon	=	3.785 332
1 milliliter	=	0.001
1 liter	=	1
1 cubic inch	=	0.016 386 7

Capacity, Dry

Units		Liters
1 dry pint	=	0.550 599
1 dry quart	=	1.101 198
1 peck	=	8.809 58
1 bushel	=	35.2383
1 liter	=	1
1 dekaliter	=	10
1 cubic inch	=	0.016 3867

Weight, below lb. and kg.

Units		Kilograms
1 grain	=	0.000 064 798 9
1 apoth. scruple	=	0.001 295 978
1 pennyweight	=	0.001 555 174
1 avoir. dram	=	0.001 771 845
1 apoth. dram	=	0.003 887 935
1 avoir. ounce	=	0.028 349 53
1 apoth. or troy ounce	=	0.031 103 48
1 apoth. or troy pound	=	0.373 241 77
1 avoir. pound	=	0.453 592 427 7
1 milligram	=	0.000 001
1 gram	=	0.001
1 kilogram	=	1

Weight, above oz. av.

Units		Kilograms
1 avoirdupois ounce	=	0.028 349 53
1 avoirdupois pound	=	0.453 592 427 7
1 short hundredweight	=	45.359 243
1 short ton	=	907.184 86
1 long ton	=	1016.047 04
1 kilogram	=	1
1 metric ton	=	1000

Money Values

(Legal equivalents from Secretary of Treasury, July 1, 1914)

Units		Dollars
1 dollar	=	1.
1 franc (French)	=	.193
1 mark (German)	=	.238
1 pound sterling (British)	=	4.8665
1 shilling (British)	=	.2433
1 penny (British)	=	.020275

Cents, centimes and pfennig are not included as they may be figured as decimals of dollar, franc and mark, respectively.

(*Continued on following page*)

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A Convenient Metric Conversion

Compiled by C. W. Hunt

Millimeters × .03937 = inches.
Millimeters ÷ 25.4 = inches.
Centimeters × .3937 = inches.
Centimeters ÷ 2.54 = inches.
Meters × 39.37 = inches. (Act of Congress.)
Meters × 3.281 = feet.
Meters × 1.094 = yards.
Kilometers × .6214 = miles.
Kilometers ÷ 1.6093 = miles.
Kilometers × 3280.8 = feet.
Square Millimeters × .00155 = square inches.
Square Millimeters ÷ 645.2 = square inches.
Square Centimeters × .155 = square inches.
Square Centimeters ÷ 6.452 = square inches.
Square Meters × 10.764 = square feet.
Square Kilometers × 247.1 = acres.
Hectare × 2.471 = acres.
Cubic Centimeters ÷ 16.387 = cubic inches.
Cubic Centimeters ÷ 3.697 = fluid drachms.
Cubic Centimeters ÷ 29.57 = fluid ounces.
Cubic Meters × 35.314 = cubic feet.
Cubic Meters × 1.308 = cubic yards.
Cubic Meters ×264.2 = gallons (231 cubic inches).
Liters × 61.023 = cubic inches. (Act of Congress.)
Liters × 33.84 = fluid ounces.
Liters × .2642 = gallons (231 cubic inches).
Liters ÷ 3.785 = gallons (31 cubic inches).
Liters ÷ 28.317 = cubic feet.
Hectoliters × 3.531 = cubic feet.
Hectoliters × 2.838 = bushels (2150.42 cubic inches).
Hectoliters × .1308 = cubic yards.
Hectoliters × 26.42 = gallons (231 cubic inches).
Grammes × 15.432 = grains. (Act of Congress.)
Grammes × 981 = dynes.
Grammes ÷ 28.35 = ounces avoirdupois.
Joule × .7373 = foot pounds.
Kilograms × 2.2046 = pounds.
Kilograms × 35.27 = ounces avoirdupois.
Kilograms ÷ 907.2 = tons (2,000 pounds).
Kilograms per square cent. × 14.223 = pounds per square inch.
Kilogrammeters × 7.233 = foot lbs.
Kilo per Meter × .672 = lbs. per foot.
Kilo per Cubic Meter × .0624 = lbs. per cubic foot.
Kilo-watts × 1.34 = horse-power.
Watts ÷ 746 = horse-power.
Watts × .7373 = ft. pounds per second.
Caloric × 3.968 = B.T.U.
Cheval vapeur × .9863 = horse-power.
Centigrade × 1.8 + 32 = degree Fahrenheit.
Francs × .193 = dollars.
Gravity Paris = 980.94 Centimeter per sec.

French and American Equivalent Measures

MEASURES OF LENGTH

French		United States	
1	meter	39.37	inches, or 3.28083 feet
.3048	meter	1	foot
1	centimeter	.3937	inch
2.54	centimeters	1	inch
1	millimeter	.03937	inch, or 1/22 inch nearly
25.4	millimeters	1	inch
1	kilometer	1093.61	yards, or .62137 mile

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Equivalent Values of Electrical, Mechanical and Heat Units

Unit	Equivalent Value in Other Units	
1 Kilowatt Hour =	1,000	watt hours.
	1.341	horsepower hours.
	2,655,180	ft.-lbs.
	3,600,000	joules.
	3,415	heat units.
	367,100	kilogram meters.
	0.234	lb. carbon oxidized with perfect efficiency.
	3.52	lbs. water evaporated from and at 212 degrees F.
	22.77	lbs. of water raised from 62 degrees to 212 degrees F.
1 Horsepower Hour =	0.7457	kilowatt hours.
	1,980,000	ft.-lbs.
	2,546.5	heat units per hour.
	273,740	kilogram meters.
	0.174	lb. carbon oxidized with perfect efficiency.
	2.62	lbs. water evaporated from and at 212 degrees F.
	17.0	lbs. water raised from 62 degrees F. to 212 degrees F.
1 Kilowatt =	1,000	watts.
	1.3410	horsepower.
	2,655,180	ft.-lbs. per hour.
	44,253	ft.-lbs. per minute.
	737.56	ft.-lbs. per second.
	3,415	heat units per hour.
	56.92	heat units per minute.
	0.9846	heat units per second.
	0.234	lb. carbon oxidized per hour.
	3.52	lbs. water evap. per hour from and at 212 degrees.
1 Horsepower =	745.7	watts.
	0.7457	kilowatt.
	33,000	ft.-lbs. per minute.
	550	ft.-lbs. per second.
	2,546.5	heat units.
	42.44	heat units per minute.
	0.707	heat units per second
	0.174	lb. carbon oxidized per hour.
	2.62	lbs. water evap. per hour from and at 212 degrees F.
1 Joule =	1	watt second.
	0.000000278	kilowatt hour.
	0.102	kilogram meters.
	0.0009486	heat units.
	0.73756	ft.-lb.

(*Continued on following page*)

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Equivalent Values of Electrical, Mechanical and Heat Units

Unit	Equivalent Value in Other Units	
1 Ft.-lb. =	1.3558	joules.
	0.13826	kilogram meters.
	0.0000003766	kilowatt hour.
	0.0012861	heat unit.
	0.0000005	horsepower hour.
1 Watt =	1	joule per second.
	0.001341	horsepower.
	3.415	heat units per hour.
	0.73756	ft.-lb. per second.
	0.0035	lb. water evap. per hour.
	44.254	ft.-lbs. per minute.
1 Watt per sq. in. =	8.20	heat units per sq. ft. per minute.
	6,373	ft.-lbs. per sq. ft. per minute.
	0.1931	horsepower per sq. ft.
1 Heat unit =	1,054.2	watt seconds.
	777.54	ft.-lbs.
	107.5	kilogram meters.
	0.0002928	kilowatt hour.
	0.0003927	horsepower hour.
	0.0000685	lb. carbon oxidized.
	0.001030	lb. water evap. from and at 212 degrees F.
1 Heat unit per sq. ft. per min. =	0.1220	watt per sq. in.
	0.01757	kilowatt per sq. ft.
	0.02356	horsepower per sq. ft.
1 Kilogram Meter =	7.233	ft.-lbs.
	0.000003653	horsepower hour.
	0.000002724	kilowatt hour.
	0.009302	heat unit.
1 lb. Carbon Oxidized with perfect efficiency =	14,600	heat units.
	1.11	lbs. anthracite coal oxidized.
	2.5	lbs. dry wood oxidized.
	22	cubic feet illuminating-gas.
	4.275	kilowatt hours.
	5.733	horsepower hours.
	11,352,000	ft.-lbs.
	15.05	lbs. of water evap. from and at 212 degrees F.
1 lb. Water Evap. from and at 212 degrees F. =	0.2841	kilowatt hour.
	0.3811	horsepower hour.
	970.4	heat units.
	104,320	kilogram meters.
	1,023,000	joules.
	754,525	ft.-lbs.
	0.066466	lb. carbon oxidized.

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Table of Kilogramme Calories, Equivalent to British Thermal Units

British Thermal	0	1	2	3	4	5	6	7	8	9	British Thermal
0	..	.252	.504	.756	1.008	1.260	1.512	1.764	2.016	2.268	0
10	2.52	2.772	3.024	3.276	3.528	3.780	4.032	4.284	4.536	4.788	10
20	5.04	5.292	5.544	5.796	6.048	6.300	6.552	6.804	7.056	7.308	20
30	7.56	7.812	8.064	8.316	8.568	8.820	9.072	9.324	9.576	9.828	30
40	10.08	10.332	10.584	10.836	11.088	11.340	11.592	11.844	12.096	12.348	40
50	12.60	12.852	13.104	13.356	13.608	13.860	14.112	14.364	14.616	14.868	50
60	15.12	15.372	15.624	15.876	16.128	16.380	16.632	16.884	17.136	17.388	60
70	17.64	17.892	18.144	18.396	18.648	18.900	19.152	19.404	19.656	19.908	70
80	20.16	20.412	20.664	20.916	21.168	21.420	21.672	21.924	22.176	22.428	80
90	22.68	22.932	23.184	23.436	23.688	23.940	24.192	24.444	24.696	24.948	90

1 British thermal unit = 251.996 gramme calories.

Weights, Fusion Points and Conductivity of Metals

	Pounds per Cu. Ft.	Specific Gravity	Fusion Point	Heat Conductivity	Electric Conductivity
Aluminum	166	2.66	1159	313	551
Antimony	418	6.70	800	40	42
Babbitt metal	440	7.18	....	....	....
Bismuth	607	9.74	511	18	12
Brass, cast	505	8.10	....	....	....
Brass, rolled	525	8.40	....	....	....
Bronze, aluminum	471	7.55	....	....	....
Bronze, phosphor	576	9.23	....	....	....
Copper, cast	542	8.70	1922	736	999
Copper, rolled	555	8.90	....	....	....
Gold, 24 carat	1204	19.26	1913	532	806
Iron, cast	450	7.21	..	....	....
Iron, wrought	480	7.90	....	119	164
Iron, pure	....	....	2912	....	....
Lead, commercial	710	11.38	621	85	88
Mercury, 60F	846	13.58	....	13	25
Nickel	549	8.80	2640	....	79
Platinum	1342	21.50	3230	84	167
Silver	655	10.50	1742	1000	1000
Steel, Bessemer	490	7.85	....	....	....
Tin	459	7.35	450	152	152
Zinc	437	7.15	783	....	....

Heat and electric conductivity are measured in comparison with these properties in silver.

The weight of a cubic foot of distilled water is in pounds, 62.47 at 32 deg. F., 62.425 at 39 deg. F., 62.355 at 62 deg. F., 59.700 at 212 deg. F., and 57.400 as ice.

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as it relates to

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Capacity of Atmospheric Air for Water Vapor at Different Temperatures

Temperature in Degrees Fahrenheit	Pounds per Cubic Feet Dry Air	Pounds of Vapor in One Pound of Air	Weight in Pounds, Cubic Feet Saturated Air	Vapor in Air	A | V
32	0.0807	0.00379	0.0802	0.000304	263.7
42	0.0791	0.00561	0.0784	0.000440	178.18
52	0.0776	0.00819	0.0766	0.000627	122.
62	0.0761	0.01179	0.0747	0.000881	85.
72	0.0747	0.01680	0.0727	0.001221	59.5
82	0.0733	0.02361	0.0706	0.001667	42.3
92	0.0720	0.03289	0.0684	0 002250	30.3
102	0.0707	0.04547	0.0659	0.002997	22

Variation of Volume and Temperature With Compression

Gauge Pressure	Volume	Temperature
0	1.000	60
2	.910	80.4
5	.810	106
10	.690	145
20	.543	207
30	.454	252
40	.393	302
50	.350	339
75	.276	420
100	.232	485
115	.213	518
130	.197	550
145	.184	580
160	.172	607
175	.163	632
200	.149	672

This table is figured on the asumption that no heat is added or abstracted.

Boiling Point of Water at Various Altitudes

Altitude Above Sea Level in Feet	Boiling Point of Water in Degrees Fahrenheit
0.000	212
1,025	210
2,063	208
3,115	206
4,169	204
5,225	202
6,304	200
7,381	198
8,431	196
9,579	194
10,685	192
11,800	190

To keep the cooling water from reaching the boiling point at any altitude, as well as at any atmospheric temperature, automatic heat regulation is therefore necessary.

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GRINDING COMPOUND

Saves 50% of the usual time consumed in scraping babbitt and bronze bearings and produces a far superior and more durable bearing surface.

"100%" is used and endorsed by many of the leading motor builders and prominent service organizations in the country.

"100%" is made in two grades, "fine" for finishing babbitt, and "coarse" for hard grades of babbitt also bronze bearings, wrist pin bushings, etc.

LIST PRICE

Single cans net weight 3 oz. each.....$1.50
Packed in 6-can cartons, 24 cartons in wooden case

DISCOUNTS TO THE TRADE

If not stocked by your jobber write us direct, giving jobber's name.

RENREW PRODUCTS COMPANY
370 West 51st Street New York City

"ELECTRIC SERVICE STATION ENGINEERS"

The Quality Growler

It tests Generator armatures or Starting armatures.

It detects troubles not found by the ordinary type of growler.

This automatic growler gives tests under operating conditions, short circuits and grounds in coils, leaks due to moisture and charred insulation, commutator trouble, loose leads, grounds and short circuited bars, reversed coils; transposed leads and other trouble quickly and accurately located. Comparative meter reading gives positive indication of all troubles that armatures and field coils are subject to.

FEATURES

Automatic Switch—Shunt Bars—Series Parallel Switch—Testing Bug

All possible armature troubles charted and instructions given for testing for each, with each device.

The Cadmium Tester—Another Quality trouble chaser. The Cadmium Tester is to your battery what the X-Ray is to the human body.

Quality Electric Products Co.
907 East 15th Street, Kansas City, Mo.

The AUTOMAT Plug

SELF-CLEANING

does everything any other spark plug does and

SIX

things no other can do.

IT

(1) Cleans itself
(2) Saves gasoline
(3) Increases power
(4) Cools itself
(5) Reduces "oil pumping"
(6) Permits direct priming

The AUTOMAT was subjected to severest tests for over a year and a half under actual operating conditions, without a failure. Official tests and letters in our files prove our claims.

The materials and workmanship in the AUTOMAT are of the highest grade.

Each AUTOMAT is guaranteed without limit as to time.

DEALERS: Write for our proposition and prices, stating your approximate monthly needs.

THE AUTOMATIC IGNITION CO.
Foster Building Denver, Colorado

Bingham Perfected Spark Plug

The Spark Plug that Sparks

Tell at a glance whether each spark plug is working properly.

Guaranteed to work successfully in oil pumping cylinders.

Retail at $1.25 Each

Liberal Discount to Dealers

Bingham Perfected Spark Plugs
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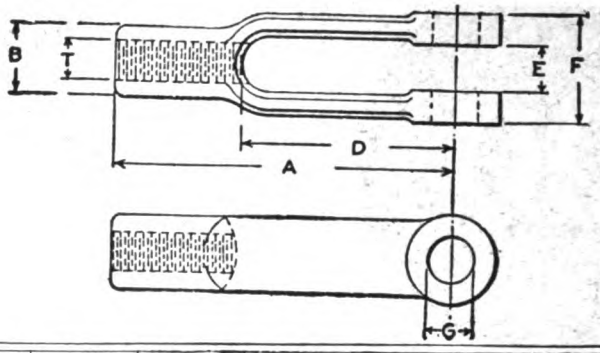
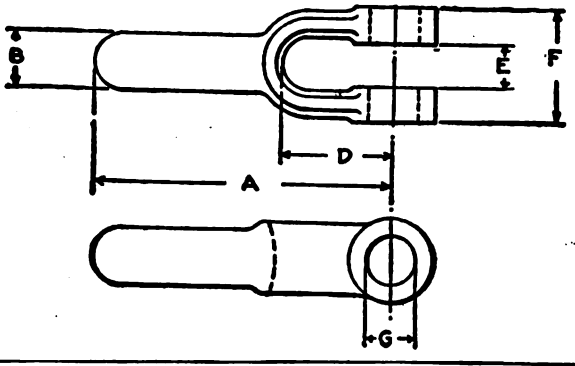
Adjustable Yoke Rod Ends

Threads U. S. Form. **S. A. E. Practice.**



T	A	B	D	E	F	G	Limits of G	
3/16—32	1 9/16	5/16	1	3/16	7/16	3/16	+0.001	−0.001
1/4—28	2	7/16	1 1/4	9/32	5/8	1/4	+0.001	−0.001
5/16—24	2 1/4	1/2	1 7/16	11/32	3/4	5/16	+0.001	−0.001
3/8—24	2 1/2	5/8	1 5/8	7/16	7/8	3/8	+0.001	−0.001
7/16—20	2 7/8	23/32	1 7/8	1/2	1	7/16	+0.001	−0.001
1/2—20	4 3/16	13/16	3 1/16	9/16	1 1/8	1/2	+0.001	−0.002
5/8—18	4 15/16	1 1/16	3 11/16	11/16	1 3/8	5/8	+0.001	−0.002
3/4—16	6 1/16	1 1/4	4 9/16	13/16	1 5/8	3/4	+0.001	−0.002
7/8—14	7 1/8	1 7/16	5 1/4	15/16	1 7/8	7/8	+0.001	−0.002
1—14	8	1 5/8	6	1 1/16	2 1/8	1	+0.001	−0.002

Plain Yoke Rod Ends



B	A	D	E	F	G	Limits of G	
3/16	1 1/8	7/16	3/16	7/16	3/16	+0.001	−0.001
1/4	1 3/4	5/8	9/32	5/8	1/4	+0.001	−0.001
5/16	2	3/4	11/32	3/4	5/16	+0.001	−0.001
3/8	2 1/8	23/32	7/16	7/8	3/8	+0.001	−0.001
7/16	2 1/4	1	1/2	1	7/16	+0.001	−0.001
1/2	2 1/2	1 1/8	9/16	1 1/8	1/2	+0.001	−0.002
5/8	2 3/8	1 7/16	11/16	1 3/8	5/8	+0.001	−0.002
3/4	3 3/8	1 11/16	13/16	1 5/8	3/4	+0.001	−0.002
7/8	4	2	15/16	1 7/8	7/8	+0.001	−0.002
1	4 1/2	2 1/4	1 1/16	2 1/8	1	+0.001	−0.002

(Continued on following page.)

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A partial view of Prest-O-Lite's great Indianapolis plant.
Other factories at Cleveland, San Francisco and Toronto

Prest-O-Lite

Service First!

Prestige may be yours

PREST-O-LITE Prestige is the result of a definite service policy. The great Prest-O-Lite organization stands behind its 2,500 Distributors and Service Stations with real assistance in the solution of every problem which may arise in a busy battery business.

if you can appreciate sharing in the advantages of making Prest-O-Lite Prestige your own — if you can qualify as regards capital, experience and reputation—write for particulars of opportunities for new Service Stations in open territory.

PB-511

THE PREST-O-LITE COMPANY, INC.
Carbide & Carbon Bldg., 30 E. 42d St., New York, N.Y.
Eighth and Brannan Streets, San Francisco

In Canada:
PREST-O-LITE CO. OF CANADA, LIMITED, TORONTO

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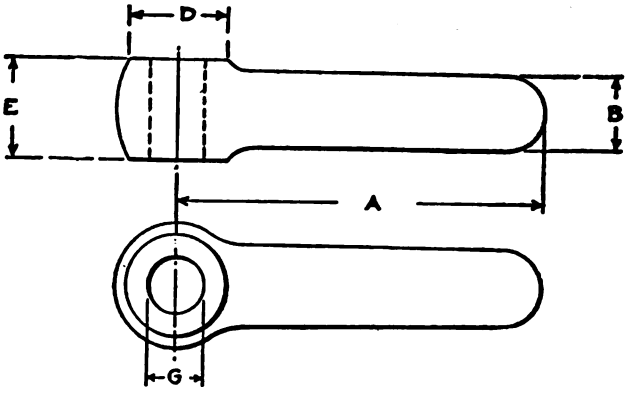
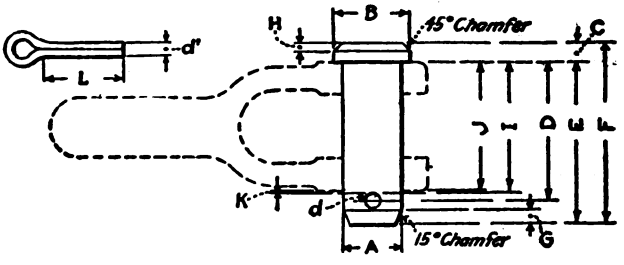
Eye Rod-Ends



A	B	D	E	G	Limits of G	
1⅛	3/16	3/8	3/16	3/16	+0.001	−0.001
1¼	¼	½	9/32	¼	+0.001	−0.001
1⅜	5/16	19/32	11/32	5/16	+0.001	−0.001
1½	3/8	11/16	7/16	3/8	+0.001	−0.001
1½	7/16	13/16	½	7/16	+0.001	−0.001
1¾	½	15/16	9/16	½	+0.001	−0.002
2	5/8	1 3/16	11/16	5/8	+0.001	−0.002
2⅜	¾	1 7/16	13/16	¾	+0.001	−0.002
2¾	⅞	1 13/16	15/16	⅞	+0.001	−0.002
3	1	1 15/16	1 1/16	1	+0.001	−0.002

Rod End Pins



A	Limits of A		B	C	D		E	F	G	H
	−0.002	−0.004	5/16	1/16	31/64	0.4844	19/32	21/32	3/64	3/64
	−0.002	−0.004	3/8	3/32	43/64	0.6719	51/64	57/64	1/16	1/32
	−0.002	−0.004	7/16	3/32	13/16	0.8125	31/32	1 1/16	5/64	1/32
	−0.002	−0.004	½	⅛	15/16	0.9375	1 1/32	1 7/32	3/64	1/32
	−0.002	−0.004	9/16	5/32	1 1/16	1.0625	1 15/64	1 25/64	3/32	3/64
	−0.004	−0.007	⅝	5/32	1 13/64	1.2031	1 27/64	1 37/64	7/64	5/64
	−0.004	−0.007	13/16	13/64	1 15/32	1.4687	1 29/32	1 59/64	1/64	1/16
	−0.004	−0.007	15/16	¼	1¾	1.7500	2 3/64	2 15/64	5/32	5/64
	−0.004	−0.007	1 1/16	5/16	2 1/64	2.0156	2 11/32	2 21/32	3/16	3/32
	−0.004	−0.007	1 3/16	11/32	2 17/64	2.2563	2⅝	2 31/32	7/32	7/64

(*Continued on following page.*)

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TEETOR
"PERFECT-CIRCLE" PISTON RINGS

PISTON RING ENGINEERS SINCE 1905

Originators of the INDIVIDUALLY CAST Piston Ring

Allow us the opportunity of solving your piston ring difficulties

THE INDIANA PISTON RING CO.
Hagerstown, Indiana

THE BUCKWALTER CONNECTING ROD ALIGNING DEVICE

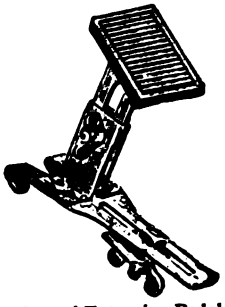
REPAIRMEN: You realize that for A-1 results you must test and align every rod—on every motor you overhaul. The Buckwalter Aligning device is the quickest and most accurate tool for the purpose ever devised. Shows in a second to the thousandth of an inch any inaccuracy in a connecting rod. Nine bushings furnished with the tool enable you to test any size rod. So simple in operation that even an inexperienced mechanic can straighten connecting rods accurately and quickly.

Carefully made to insure absolute accuracy and stability.

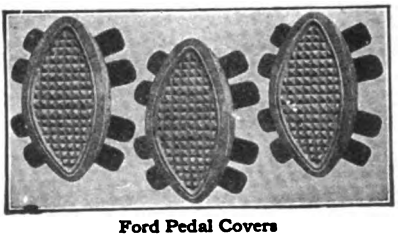
JOBBERS: There is still some good territory open for progressive distributors. Full information on request.

JOHN S. BUCKWALTER CO.
413-415 N. Mary St., Lancaster, Penna.

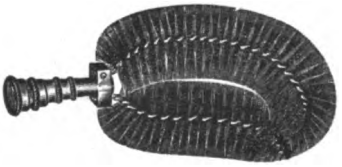
"RICO" ACCESSORIES



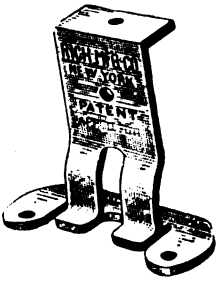
Universal Extension Pedal



Ford Pedal Covers



Fountain Auto Washer



Reinforced Ford Bracket

RICH MFG. COMPANY
1777 Broadway New York

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Rod End Pins (Cont'd)

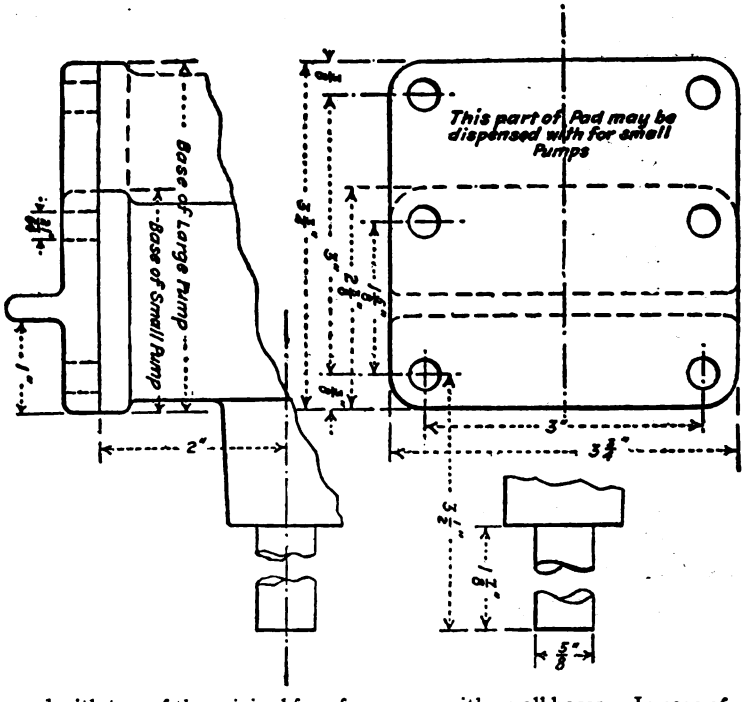
A.	I	J	K	Cotter Pin		d = Drill		Difference	
				d¹	L	No.	Dia.	d − d¹	*d − d¹ + k
5/16	0.4464	7/16	0.0089	1/16	5/16	48	0.076	0.0135	0.0224
1/4	0.6339	5/8	0.0089	1/16	1/16	48	0.076	0.0135	0.0224
5/16	0.7595	3/4	0.0095	3/32	1/2	36	0.106	0.0123	0.0224
3/8	0.8845	7/8	0.0095	3/32	5/8	36	0.106	0.0123	0.0218
7/16	1.0095	1	0.0095	3/32	3/4	36	0.106	0.0123	0.0218
1/2	1.1331	1 1/8	0.0081	1/8	7/8	28	0.140	0.0150	0.0231
5/8	1.3987	1 3/8	0.0237	1/8	1	28	0.140	0.0150	0.0231
3/4	1.6550	1 5/8	0.0300	11/64	1 1/4	11	0.191	0.0192	0.0335
7/8	1.9201	1 7/8	0.0451	11/64	1 1/2	11	0.191	0.0191	0.0642
1	2.1701	2 1/8	0.0451	11/64	1 3/4	11	0.191	0.0191	0.0642

All dimensions in inches. *Total clearance between yoke and cotter.

Tire-Pump Bases

S. A. E. Standard

In the tire-pump bases and pads shown in the accompanying sketch, the pads are to be 3¾ in. square, with four 21/64-in. holes symmetrically located on 3-in. centers, and two additional



holes to be used with two of the original four for pumps with small bases. In case of small pumps the unused part of the base may be omitted. If a rib is used on the bottom of the pad, it is to be located as shown in order to clear the bolts in all six of the holes.

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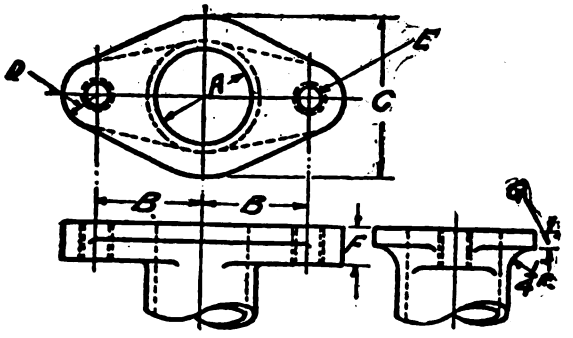
Carbureter Fittings (*S. A. E. Standard*)

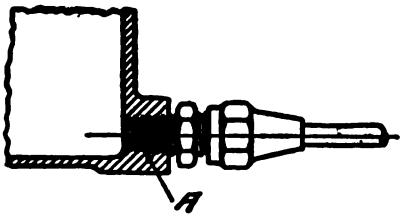
FLANGES



Carbureter Size	A	B	C	D	E *	F	G
3/4	15/16"	1 1/16"	1 5/8"	11/32"	5/16"x18 thr.	3/8"	1/8"
7/8	1 1/16"	1 1/8"	1 3/4"	11/32"	5/16"x18 thr.	3/8"	1/8"
1	1 3/16"	1 3/16"	1 7/8"	11/32"	5/16"x18 thr.	13/32"	5/32"
1 1/4	1 7/16"	1 11/32"	2 3/16"	13/32"	3/8" x16 thr.	15/32"	3/16"
1 1/2	1 11/16"	1 15/32"	2 1/2"	13/32"	3/8" x16 thr.	15/32"	3/16"
1 3/4	1 15/16"	1 21/32"	2 13/16"	15/32"	7/16"x14 thr.	9/16"	7/32"
2	2 3/16"	1 25/32"	3 1/8"	15/32"	7/16"x14 thr.	9/16"	7/32"

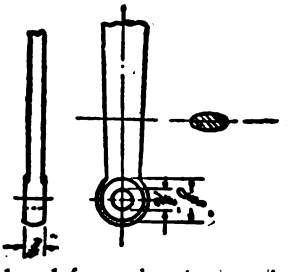
*U. S. Standard thread.
All dimensions in inches.

GASOLINE PIPE SIZES

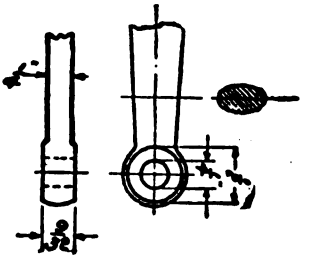


Carbureter Size	A, Briggs Standard. Pipe Thread
3/4"	1/8"
7/8"	1/8"
1"	1/8"
1 1/4"	1/4"
1 1/2"	1/4"
1 3/4"	1/4"
2"	1/4"

THROTTLE LEVERS



3/16" Rod end for carbureters up to 1 inch



1/4" Rod end for carbureters of 1 1/4 to 2 inches inclusive

(*Continued on page 1226*)

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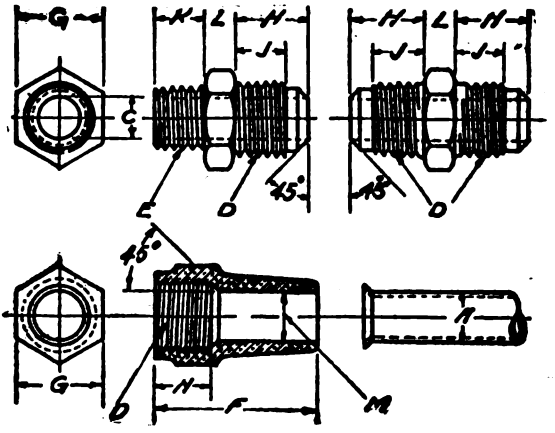
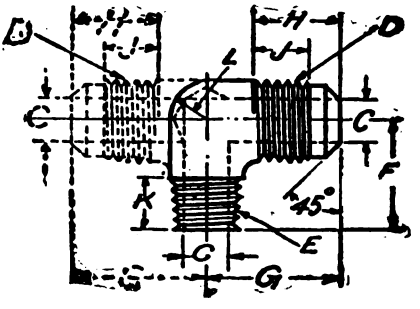
Carbureter Fittings (*S. A. E. Standard*) (*Cont'd*)

FLARED TUBE UNIONS



A	Pipe diameter	1/4	5/16	3/8	7/16	1/2
C	Bore, male part	3/16	7/32	9/32	5/16	13/32
D	S. A. E. thread	7/16x20 thr.	1/2x20 thr.	5/8x18 thr.	11/16x16 thr.	3/4x16 thr.
E	Pipe thread	1/8	1/8	1/4	1/4	3/8
F		15/16	1 1/8	1 5/16	1 1/2	1 5/8
G		9/16	5/8	3/4	13/16	7/8
H		1/2	9/16	5/8	11/16	3/4
J	Thread only	11/32	3/8	13/32	7/16	1/2
K	Thread only	3/8	3/8	7/16	7/16	1/2
L		3/16	7/32	1/4	9/32	5/16
M	Bore, female part	0.255–0.260	0.317–0.322	0.380–0.385	0.442–0.447	0.505–0.510
N		11/32	3/8	7/16	1/2	9/16

FLARED TUBE ELLS AND TEES



A	Tube diameter	1/4	5/16	3/8	7/16	1/2
C	Drill diameter	3/16	7/32	9/32	5/16	13/32
D	S. A. E. thread	7/16x20	1/2x20	5/8x18	11/16x16	3/4x16
E	Briggs std. pipe thread	1/8	1/8	1/4	1/4	3/8
F	Center to face	3/4	3/4	7/8	15/16	1
G	Center to face	7/8	15/16	1	1 1/8	1 3/16
H		1/2	9/16	5/8	11/16	3/4
J	Thread only	11/32	3/8	13/32	7/16	1/2
K	Thread only	3/8	3/8	7/16	7/16	1/2
L	Radius	1/8	1/4	9/32	5/16	11/32

All dimensions on this sheet in inch measure

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Automobile Engine Light Lubricating Oil

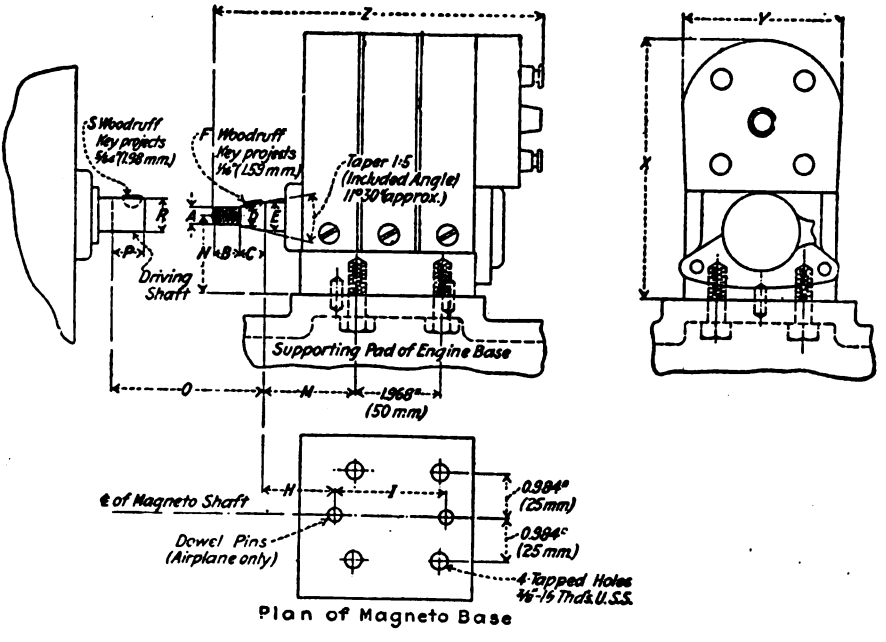
Pure mineral oil. The following characteristics are desired:

Specific gravity	28° to 32° Baumé
Flash point, not less than	400° F.
Fire test, not less than	450° F.
Viscosity at 100° F., Saybolt viscosimeter, not over	300 seconds
Viscosity at 210° F., Saybolt viscosimeter	40 to 50 seconds
Viscosity at 210° F., Tagliabue viscosimeter	60 to 65 seconds
Carbon residue, not over	0.50 per cent.

Magneto Dimensions

S. A. E. Practice

AIRPLANE, AUTOMOBILE, MARINE, MOTORCYCLE, TRACTOR



When it is desired to use a non-magnetic shim with magnetoes mounted on cast iron pads the shims shall be ½ in. thick, and high strength bronze bolts used. The thickness of the shim shall be added to the dimension *N* on the drawing when laying out the distance from the face of the mounting pad to the center of the magneto shaft. A grid construction may be used for the shims.

Flexible Disk Couplings

The following dimensions are recommended for flexible disk couplings for all magneto drives, including impulse type, and generators.

Outside diameter of disk 2¾ in., inside diameter of disk 1 in., diameter of bolt circle 2 in. thickness of disk ¼ in., number of ¼-in. bolts equally spaced 4.

(Continued on following page.)

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Magneto Dimensions

S. A. E. Standard and Recommended Practice

AIRPLANE, AUTOMOBILE, MARINE, MOTORCYCLE, TRACTOR

		4 and 6 Cyl.		8 and 12 Cyl.		Motorcycle	
		Inch	Mm.	Inch	Mm.	Inch	Mm.
A U. S. S. Threads		⅜"-16 thds.	9.53–1.58	⅜"-16 thds.	9.53–1.58	5/16"-18 thds.	7.94–1.41
B		.5905	15	.5905	15	.4170	10.59
C		.590	14.98	.590	14.98	.3543	9
D		.472	12	.472	12	.4409	11.20
E		.590	14.98	.590	14.98	.5118	13
F Woodruff Key (Dia. X thickness)		No. 3 ½x⅛	No. 3 12.7x 3.18	No. 3 ½x⅛	No. 3 12.7x 3.18	Special 5/16x3/32	Special 7.94x 2.38
H		No std.	.....	1.693	43	No std.	.....
I		No std.	.....	2.519	63.98	No std.	.....
M		2.086	52.98	2.086	52.98	1.553	39.45
N		1.771	44.98	1.968	50	1.771	44.98
*‡O		2.375	60.32	2.375	60.32	No std.	.....
*‡P		.75	19.05	.75	19.05	No std.	.....
*†‡R (limits)		.750 .749	19.05 19.02	.750 .749	19.05 19.02	No std.	.....
Coupling Bore..... (limits)		.7505 .7495	19.06 19.04	.7505 .7495	19.06 19.04	No std.	.....
‡S Woodruff Key (Dia. X thickness)		No. 8 ¾x5/32	No. 8 19.05x 3.97	No. 8 ¾x5/32	No. 8 19.05x 3.97	No std.	.....
Magneto Space (Max.)	X	8.000	203.20	9.000	228.60	6.000	152.40
	Y	5.000	127.00	5.000	127.00	3.750	95.25
	Z	10.000	254.00	10.000	254.00	6.375	161.93
Width at Brushes	W	No std.	.....	No std.	.....	4.000	101.60
Adv. Lever Rad.		2.125	53.97	No std.	.....	1.968	50
Timing Lever Holes	Tapped S. A. E.	¼"-28 thds.	6.35–.9 Mm. p'ch	No std.	.....	No std.	.....
	Plain	.25	6.35	No std.	.....	.2185	5.55
Dowels (Airplane Only)	Diam.	5/16 +.002 −.002	7.94 +.05 −.00	5/16 +.002 −.000	7.94 +.05 −.00	No std.	.....
	Depth	5/16	7.94	5/16	7.94	No std.	.....

*Provides for Impulse Couplings for tractors. Conforms to National Gas Engine Association standard.

†Recommended material for drive-shaft is selected cold-rolled stock.

‡Not for use in airplanes.

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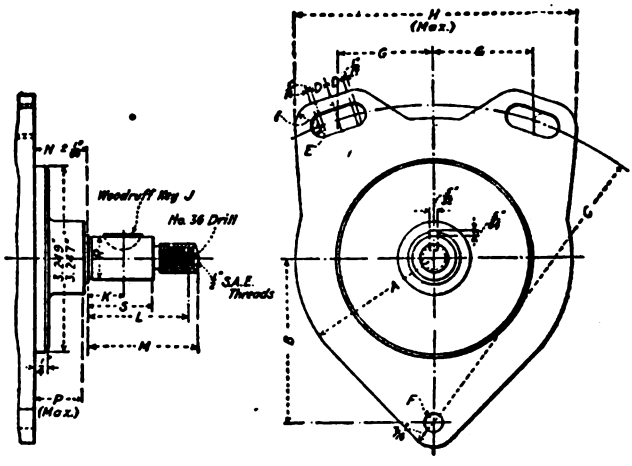
Flange Mountings for Generators

Gear or Chain Drive

S. A. E. Standard

There are two standard sizes of generator flanges as shown. Each is provided with a pilot for locating in a bored hole when used with a gear drive and with slotted holes to allow for adjustment when used with chain drive. In the latter case the hole in the gear case will be made to clear the pilot.



Size No.	A	B	C	D	E	F	G	H	I
1	2⅜	2 13/16	5⅝	¼	7/32	13/32	1⅝	4¾	7/16
2	2⅝	3 1/16	5⅞	5/16	¼	15/32	1 13/16	5⅜	½

Size No.	J	K	L	M	N	P	R	S
1	6	9/16	1 17/32	1 11/16	13/16	¾	0.6250 0.6245	1
2	8	11/16	1 25/32	1 15/16	1 1/16	1	0.7500 0.7495	1¼

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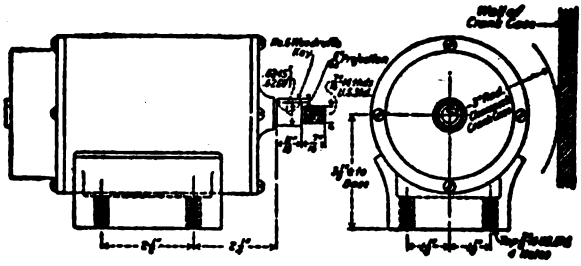
Bracket Mounting for Generators

S. A. E. Standard



This specification is complete in regard to mounting dimensions of the generator. Bracket dimensions and the dimensions and location of the pad on the crankcase are not included.

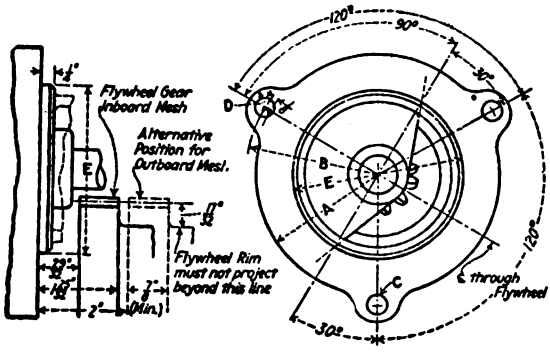
Generator Shaft-End for Coupling Drive

S. A. E. Standard

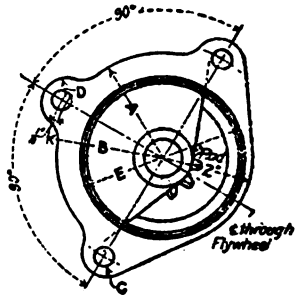
The shaft-end illustrated under Bracket Mounting for Generators is considered of ample capacity for all sizes of generators, except in special instances where small generators, naturally not suited to this Standard, may be fitted with the standard magneto shaft-end in accordance with present practice.

Flange Mountings for Starting Motors

S. A. E. Standard



S. A. E. Size Nos. 2 & 3



S. A. E. Size No. 1

Size No.	A	B	C	D	E
1	2⅜	2½	13/32	9/16	3.496 to 3.499
2	2 11/16	2⅞	13/32	9/16	3.621 to 3.624
3	2 13/16	3⅛	15/32	15/32	3.621 to 3.624

These standard flanges may be used for either right hand or left hand mounting of motors.

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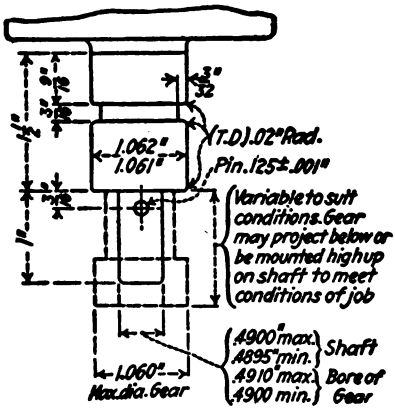
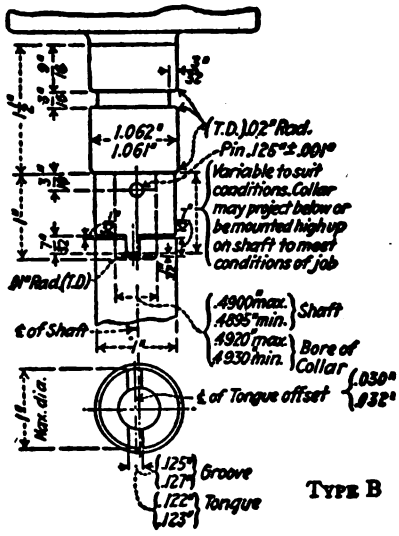
Ignition Distributor Mounting

S. A. E. Standard

The ignition distributor mounting dimensions shown are suitable for use when the distributor is mounted on either the generator or the engine.



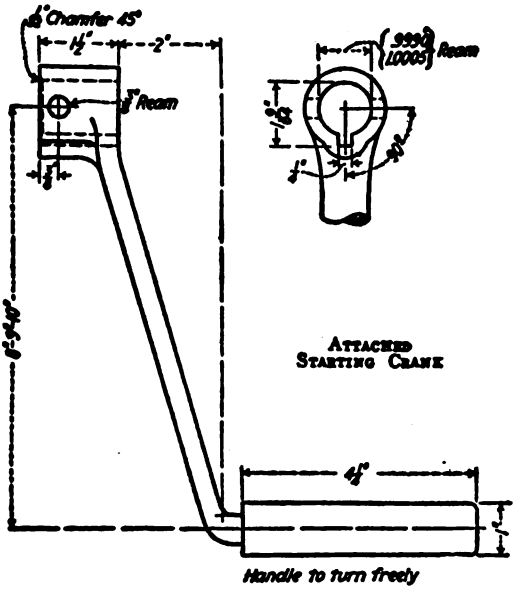
TYPE A



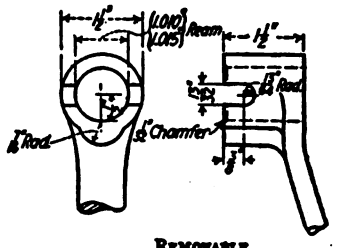
TYPE B

Attached and Removable Starting Cranks

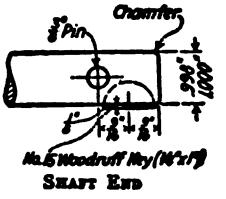
S. A. E. Standard



ATTACHED STARTING CRANK



REMOVABLE STARTING CRANK



SHAFT END

No Woodruff key is to be provided in shafts for removable starting cranks.

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Lock Washer Dimensions (*S. A. E. Standard*)

The outside diameters of lock washers shall coincide practically with the long diameters of S. A. E. Standard nuts, which are approximately the short diameters of United States Standard nuts.

The inside diameters of the lock washers shall be from 164″ to 132″ larger than bolt diameters.

All lock washers shall be parallel-faced sections; and bulging or malformed ends must be avoided.

Table of Sizes

Automobile Heavy (A. H.)

For General Use

Bolt Diameter	Lock Washer Section	Bolt Diameter	Lock Washer Section
3/16″	1/16″x 1/16″	11/16″	1/4″x 1/4″
1/4″	5/64″x 5/64″	3/4″	1/4″ x 1/4″
5/16″	1/8″ x 1/8″	7/8″	17/64″x17/64″
3/8″	1/8″ x 1/8″	1″	5/16″x 5/16″
7/16″	11/64″x11/64″	1 1/8″	5/16″x 5/16″
1/2″	11/64″x11/64″	1 1/4″	3/8″ x 3/8″
9/16″	13/64″x13/64″	1 3/8″	3/8″ x 3/8″
5/8″	13/64″x13/64″	1 1/2″	7/16″x 7/16″

Automobile Light (A. L.)

For Optional Use Against Soft Metal

Bolt Diameter	Lock Washer Section
3/16″	1/16″x3/64″
1/4″	5/64″x1/16″
5/16″	1/8″ x3/32″
3/8″	1/8″ x3/32″
7/16″	11/64″x1/8″
1/2″	11/64″x1/8″
9/16″	13/64″x5/32″
5/8″	13/64″x5/32″
11/16″	1/4″ x3/16″
3/4″	1/4″ x3/16″
7/8″	17/64″x3/16″
	5/16″x1/4″

Test

Temper

After compression to flat, reaction shall be sufficient to indicate necessary spring power, and on a subsequent compression to flat the lock washer shall manifest no appreciable loss in reaction.

Toughness

Forty-five per cent. of the lock washer, including one end, shall be firmly secured in a vise, and forty-five per cent., including the other end, shall be secured firmly between parallel jaws of a wrench. Movement of the wrench at right angle to helical curve shall twist the lock washer through forty-five degrees without sign of fracture; and shall twist the lock washer entirely apart within one hundred and thirty-five degrees.

Oversize Cylinders (*S. A. E. Standard*)

There has hitherto existed no uniform practice as to the amount of metal removed in regrinding worn cylinders, with the result that difficulty is experienced in securing new pistons of correct size, from the manufacturers.

With a view to eliminating all unnecessary expense and delay, the following standards have been accepted by the Society:—

Ten Thousandths	(.010″)	inch	large	for	first	oversize	standard
Twenty "	(.020″)	"	"	"	second	"	"
Thirty "	(.030″)	"	"	"	third	"	
Forty "	(.040″)	"	"	"	fourth		"

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SIZES AND TOLERANCES FOR ANNULAR BALL BEARINGS (*S. A. E. Standard*)

LIGHT SERIES

Trade No.	Bore				Diameter				Width				Corners of the Outer Race and at Bore of* Inner Race		Eccentricity Tolerance in Inches	
	Mm	Inches	Tolerance in Inches		Mm	Inches	Tolerance in Inches		Mm	Inches	Tolerance in Inches (for both races)		Mm	Inches	Inner Race	Outer Race
			Plus	Minus			Plus	Minus			Plus	Minus				
200	10	0.39370	0.0002	0.0004	30	1.18110	0	0.0005	9	0.35433	0	0.005	1	0.04	0.0006	0.0012
201	12	0.47244	0.0002	0.0004	32	1.25984	0	0.0005	10	0.39370	0	0.005	1	0.04	0.0006	0.0012
202	15	0.59055	0.0002	0.0004	35	1.37795	0	0.0005	11	0.43307	0	0.005	1	0.04	0.0006	0.0012
203	17	0.66929	0.0002	0.0004	40	1.57481	0	0.0005	12	0.47244	0	0.005	1	0.04	0.0006	0.0012
204	20	0.78740	0.0002	0.0004	47	1.85040	0	0.0005	14	0.55118	0	0.005	1	0.04	0.0006	0.0012
205	25	0.98425	0.0002	0.0004	52	2.04725	0	0.0008	15	0.59055	0	0.005	1	0.04	0.0008	0.0012
206	30	1.18110	0.0002	0.0004	62	2.44095	0	0.0008	16	0.62992	0	0.005	1	0.04	0.0008	0.0012
207	35	1.37795	0.0002	0.0004	72	2.83465	0	0.0008	17	0.66929	0	0.005	1	0.04	0.0008	0.0012
208	40	1.57481	0.0002	0.0004	80	3.14962	0	0.0008	18	0.70866	0	0.005	2	0.08	0.0008	0.0012
209	45	1.77166	0.0002	0.0004	85	3.34647	0	0.0008	19	0.74803	0	0.005	2	0.08	0.0010	0.0016
210	50	1.96851	0.0002	0.0004	90	3.54332	0	0.0008	20	0.78740	0	0.005	2	0.08	0.0010	0.0016
211	55	2.16536	0.0002	0.0004	100	3.93702	0	0.0008	21	0.82677	0	0.005	2	0.08	0.0010	0.0016
212	60	2.36221	0.0002	0.0005	110	4.33072	0	0.0008	22	0.86614	0	0.005	2	0.08	0.0010	0.0016
213	65	2.55906	0.0002	0.0005	120	4.72443	0	0.0008	23	0.90551	0	0.005	2	0.08	0.0010	0.0016
214	70	2.75591	0.0002	0.0005	125	4.92128	0	0.0008	24	0.94488	0	0.005	2	0.08	0.0010	0.0016
215	75	2.95277	0.0002	0.0005	130	5.11813	0	0.0008	25	0.98425	0	0.005	2	0.08	0.0010	0.0016
216	80	3.14962	0.0002	0.0005	140	5.51183	0	0.0008	26	1.02362	0	0.005	3	0.12	0.0012	0.0018
217	85	3.34647	0.0002	0.0006	150	5.90554	0	0.0012	28	1.10236	0	0.005	3	0.12	0.0012	0.0018
218	90	3.54332	0.0002	0.0006	160	6.29924	0	0.0012	30	1.18110	0	0.005	3	0.12	0.0012	0.0018
219	95	3.74017	0.0002	0.0006	170	6.69294	0	0.0012	32	1.25984	0	0.005	3	0.12	0.0012	0.0018
220	100	3.93702	0.0002	0.0006	180	7.08664	0	0.0012	34	1.33858	0	0.005	3	0.12	0.0012	0.0018
221	105	4.13387	0.0002	0.0006	190	7.48035	0	0.0012	36	1.41732	0	0.005	3	0.12	0.0012	0.0018
222	110	4.33072	0.0002	0.0006	200	7.87405	0	0.0012	38	1.49607	0	0.005	3	0.12	0.0012	0.0018

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Trade No.	Bore				Diameter				Width				Corners of the Outer Race and at Bore of Inner Race		Eccentricity Tolerance in Inches	
	Mm	Inches	Tolerance in Inches		Mm	Inches	Tolerance in Inches		Mm	Inches	Tolerance in Inches (for both races)		Mm	Inches	Inner Race	Outer Race
			Plus	Minus			Plus	Minus			Plus	Minus				
300	10	0.39370	0.0002	0.0004	35	1.37795	0	0.0005	11	0.43307	0	0.005	1	0.04	0.0006	0.0012
301	12	0.47244	0.0002	0.0004	37	1.45669	0	0.0005	12	0.47244	0	0.005	1	0.04	0.0006	0.0012
302	15	0.59055	0.0002	0.0004	42	1.65355	0	0.0005	13	0.51181	0	0.005	1	0.04	0.0006	0.0012
303	17	0.66929	0.0002	0.0004	47	1.85040	0	0.0005	14	0.55118	0	0.005	1	0.04	0.0006	0.0012
304	20	0.78740	0.0002	0.0004	52	2.04725	0	0.0008	15	0.59055	0	0.005	1	0.04	0.0006	0.0012
305	25	0.98425	0.0002	0.0004	62	2.44095	0	0.0008	17	0.66929	0	0.005	1	0.04	0.0008	0.0012
306	30	1.18110	0.0002	0.0004	72	2.83465	0	0 0008	19	0.74803	0	0.005	2	0.08	0.0008	0.0012
307	35	1 37795	0.0002	0.0004	80	3.14962	0	0.0008	21	0.82677	0	0.005	2	0.08	0.0008	0.0012
308	40	1.57481	0.0002	0.0004	90	3.54332	0	0.0008	23	0.90551	0	0.005	2	0.08	0.0008	0.0012
309	45	1.77166	0.0002	0.0004	100	3.93702	0	0.0008	25	0.98425	0	0.005	2	0.08	0.0010	0.0016
310	50	1.96851	0.0002	0.0004	110	4.33072	0	0.0008	27	1.06299	0	0.005	2	0.08	0.0010	0.0016
311	55	2.16536	0.0002	0.0004	120	4.72443	0	0.0008	29	1.14173	0	0.005	2	0.08	0.0010	0.0016
312	60	2.36221	0.0002	0.0005	130	5.11813	0	0.0008	31	1.22047	0	0.005	2	0.08	0.0010	0.0016
313	65	2.55906	0.0002	0.0005	140	5.51183	0	0.0008	33	1.29921	0	0.005	3	0 12	0.0010	0.0016
314	70	2.75591	0.0002	0 0005	150	5.90554	0	0.0012	35	1.37795	0	0.005	3	0.12	0.0010	0.0016
315	75	2.95277	0.0002	0.0005	160	6.29924	0	0.0012	37	1.45669	0	0.005	3	0.12	0.0010	0.0016
316	80	3.14962	0.0002	0.0005	170	6.69294	0	0.0012	39	1.53544	0	0.005	3	0.12	0.0012	0.0018
317	85	3.34647	0.0002	0.0006	180	7.08664	0	0.0012	41	1.61418	0	0.005	3	0.12	0.0012	0.0018
318	90	3.54332	0.0002	0.0006	190	7.48035	0	0.0012	43	1.69292	0	0.005	3	0.12	0.0012	0.0018
319	95	3.74017	0.0002	0.0006	200	7.87405	0	0.0012	45	1.77166	0	0.005	3	0.12	0.0012	0.0018
320	100	3.93702	0.0002	0.0006	215	8.46460	0	0.0012	47	1.85040	0	0.005	3	0.12	0.0012	0.0018
321	105	4.13387	0.0002	0.0006	225	8.85830	0	0.0012	49	1.92914	0	0.005	3	0.12	0.0012	0.0018
322	110	4.33072	0.0002	0.0006	240	9.44886	0	0.0012	50	1.96851	0	0.005	3	0.12	0.0012	0.0018

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SIZES AND TOLERANCES FOR ANNULAR BALL BEARINGS (*S. A. E. Standard*)
HEAVY SERIES

Trade No.	Bore				Diameter				Width				Corners of the Outer Race and at Bore of* Inner Race		Eccentricity Tolerance in Inches	
	Mm	Inches	Tolerance in Inches		Mm	Inches	Tolerance in Inches		Mm	Inches	Tolerance in Inches (for both races)		Mm	Inches	Inner Race	Outer Race
			Plus	Minus			Plus	Minus			Plus	Minus				
403	17	0.66929	0.0002	0.0004	62	2.44095	0	0.0008	17	0.66929	0	0.005	1	0.04	0.0006	0.0012
404	20	0.78740	0.0002	0.0004	72	2.83465	0	0.0008	19	0.74803	0	0.005	2	0.08	0.0006	0.0012
405	25	0.98425	0.0002	0.0004	80	3.14962	0	0.0008	21	0.82677	0	0.005	2	0.08	0.0008	0.0012
406	30	1.18110	0.0002	0.0004	90	3.54332	0	0.0008	23	0.90551	0	0.005	2	0.08	0.0008	0.0012
407	35	1.37795	0.0002	0.0004	100	3.93702	0	0.0008	25	0.98425	0	0.005	2	0.08	0.0008	0.0012
408	40	1.57481	0.0002	0.0004	110	4.33072	0	0.0008	27	1.06299	0	0.005	2	0.08	0.0008	0.0012
409	45	1.77166	0.0002	0.0004	120	4.72443	0	0.0008	29	1.14173	0	0.005	2	0.08	0.0010	0.0016
410	50	1.96851	0.0002	0.0004	130	5.11813	0	0.0008	31	1.22047	0	0.005	2	0.08	0.0010	0.0016
411	55	2.16536	0.0002	0.0004	140	5.51183	0	0.0008	33	1.29921	0	0.005	3	0.12	0.0010	0.0016
412	60	2.36221	0.0002	0.0005	150	5.90554	0	0.0012	35	1.37795	0	0.005	3	0.12	0.0010	0.0016
413	65	2.55906	0.0002	0.0005	160	6.29924	0	0.0012	37	1.45669	0	0.005	3	0.12	0.0010	0.0016
414	70	2.75591	0.0002	0.0005	180	7.08664	0	0.0012	42	1.65355	0	0.005	3	0.12	0.0010	0.0016
415	75	2.95277	0.0002	0.0005	190	7.48035	0	0.0012	45	1.77166	0	0.005	3	0.12	0.0010	0.0016
416	80	3.14962	0.0002	0.0005	200	7.87405	0	0.0012	48	1.88977	0	0.005	3	0.12	0.0012	0.0018
417	85	3.34647	0.0002	0.0006	210	8.26775	0	0.0012	52	2.04725	0	0.005	3	0.12	0.0012	0.0018
418	90	3.54332	0.0002	0.0006	225	8.85830	0	0.0012	54	2.12599	0	0.005	3	0.12	0.0012	0.0018
419	95	3.74017	0.0002	0.0006	250	9.84256	0	0.0012	55	2.16536	0	0.005	3	0.12	0.0012	0.0018
420	100	3.93702	0.0002	0.0006	265	10.43311	0	0.0012	60	2.36221	0	0.005	3	0.12	0.0012	0.0018

*A chamfer of 45 degrees ground true with the bore and outside diameter is recommended.

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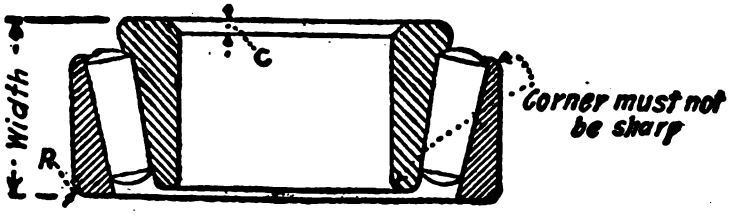
Roller Bearings

Narrow and Wide Series

S. A. E. Standard Sizes and Tolerances

(Adopted in August, 1916)



Bearing Number	Bore				Diameter				Width				Chamfer C Not Less Than		Radius R		Eccentricity Tolerance in Inches	
	Mm.	In.	Tolerance in Inches		Mm.	In.	Tolerance in Inches		Mm.	In.	Tolerance in Inches		Mm.	In.	Mm.	In.	Inner Race	Outer Race
			Plus	Minus			Plus	Minus			Plus	Minus						
RM 204...	20	.78740	.0002	.0004	47	1.85040	0	.0006	19.05	¾	.020	.020	1	.04	1	.04	.0008	.0012
RM 205...	25	.98425	.0002	.0006	52	2.04725	0	.0008	19.05	¾	.020	.020	1	.04	1	.04	.0008	.0012
RM 206...	30	1.18110	.0002	.0006	62	2.44095	0	.0008	19.05	¾	.020	.020	1	.04	1	.04	.0008	.0012
RM 207...	35	1.37795	.0002	.0006	72	2.83465	0	.0008	22.22	⅞	.020	.020	1	.04	1	.04	.0008	.0012
RM 208...	40	1.57481	.0002	.0006	80	3.14962	0	.0008	25.40	1	.020	.020	2	.08	2	.08	.0008	.0012
RM 209...	45	1.77166	.0002	.0006	85	3.34647	0	.0008	25.40	1	.020	.020	2	.08	2	.08	.0010	.0016
RM 210...	50	1.96851	.0002	.0006	90	3.54332	0	.0008	25.40	1	.020	.020	2	.08	2	.08	.0010	.0016
RM 211...	55	2.16536	.0002	.0006	100	3.93702	0	.0008	30.16	1 9/16	.020	.020	2	.08	2	.08	.0010	.0016
RM 212...	60	2.36221	.0002	.0006	110	4.33072	0	.0008	34.92	1⅜	.020	.020	2	.08	2	.08	.0010	.0016
RM 213...	65	2.55906	.0002	.0006	120	4.72443	0	.0008	34.92	1⅜	.020	.020	2	.08	2	.08	.0010	.0016
RM 214...	70	2.75591	.0002	.0006	125	4.92128	0	.0008	36.51	1 7/16	.020	.020	2	.08	2	.08	.0010	.0016
RM 215...	75	2.95277	.0002	.0006	130	5.11813	0	.0008	36.51	1 7/16	.020	.020	2	.08	2	.08	.0010	.0016
RM 216...	80	3.14962	.0002	.0006	140	5.51183	0	.0008	41.27	1⅝	.020	.020	3	.12	3	.12	.0012	.0018
RM 217...	85	3.34647	.0002	.0007	150	5.90554	0	.0012	44.45	1¾	.020	.020	3	.12	3	.12	.0012	.0018
RM 218...	90	3.54332	.0002	.0007	160	6.29924	0	.0012	50.80	2	.020	.020	3	.12	3	.12	.0012	.0018
RM 219...	95	3.74017	.0002	.0007	170	6.69294	0	.0012	55.56	2 9/16	.020	.020	3	.12	3	.12	.0012	.0018
RM 220...	100	3.93702	.0002	.0007	180	7.08664	0	.0012	60.32	2⅜	.020	.020	3	.12	3	.12	.0012	.0018
RM 221...	105	4.13387	.0002	.0007	190	7.48035	0	.0012	65.09	2 9/16	.020	.020	3	.12	3	.12	.0012	.0018
RM 222...	110	4.33072	.0002	.0007	200	7.87405	0	.0012	69.85	2¾	.020	.020	3	.12	3	.12	.0012	.0018
RM 304...	20	.78740	.0002	.0006	52	2.04725	0	.0008	22.22	⅞	.020	.020	1	.04	1	.04	.0008	.0012
RM 305...	25	.98425	.0002	.0006	62	2.44095	0	.0008	25.40	1	.020	.020	1	.04	1	.04	.0008	.0012
RM 306...	30	1.18110	.0002	.0006	72	2.83465	0	.0008	30.16	1 9/16	.020	.020	2	.08	2	.08	.0008	.0012
RM 307...	35	1.37795	.0002	.0006	80	3.14962	0	.0008	34.92	1⅜	.020	.020	2	.08	2	.08	.0008	.0012
RM 308...	40	1.57481	.0002	.0006	90	3.54332	0	.0008	36.51	1 7/16	.020	.020	2	.08	2	.08	.0008	.0012
RM 309...	45	1.77166	.0002	.0006	100	3.93702	0	.0008	39.69	1 9/16	.020	.020	2	.08	2	.08	.0010	.0016
RM 310...	50	1.96851	.0002	.0006	110	4.33072	0	.0008	44.45	1¾	.020	.020	2	.08	2	.08	.0010	.0016
RM 311...	55	2.16536	.0002	.0006	120	4.72443	0	.0008	49.21	1 15/16	.020	.020	2	.08	2	.08	.0010	.0016
RM 312...	60	2.36221	.0002	.0006	130	5.11813	0	.0008	53.97	2⅛	.020	.020	2	.08	2	.08	.0010	.0016
RM 313...	65	2.55906	.0002	.0006	140	5.51183	0	.0008	58.74	2 5/16	.020	.020	3	.12	3	.12	.0010	.0016
RM 314...	70	2.75591	.0002	.0007	150	5.90554	0	.0012	63.50	2½	.020	.020	3	.12	3	.12	.0010	.0016
RM 315...	75	2.95277	.0002	.0007	160	6.29924	0	.0012	68.26	2 11/16	.020	.020	3	.12	3	.12	.0010	.0016
RM 316...	80	3.14962	.0002	.0007	170	6.69294	0	.0012	68.26	2 11/16	.020	.020	3	.12	3	.12	.0012	.0018
RM 317...	85	3.34647	.0002	.0007	180	7.08664	0	.0012	73.02	2⅞	.020	.020	3	.12	3	.12	.0012	.0018
RM 318...	90	3.54332	.0002	.0007	190	7.48055	0	.0012	73.02	2⅞	.020	.020	3	.12	3	.12	.0012	.0018
RM 319...	95	3.74017	.0002	.0007	200	7.87405	0	.0012	77.79	3 1/16	.020	.020	3	.12	3	.12	.0012	.0018
RM 320...	100	3.93702	.0002	.0007	215	8.46460	0	.0012	82.55	3¼	.020	.020	3	.12	3	.12	.0012	.0018

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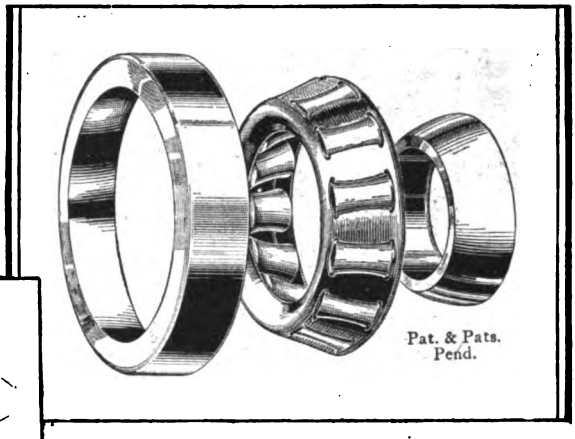

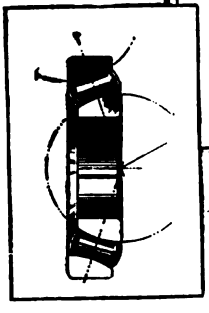

100% LOAD CAPACITY FROM ANY ANGLE

The Shafer concave rollers, set at an angle, fit the convex cup and cone and travel a natural alignment without twisting or climbing when under load—full length contact is presented no matter from what angle the load is received.

Moreover, the Shafer is self-aligning—there can be no such thing as wear and breakdown through improper fitting. The cone fits into the nest of rollers accurately, giving it a freedom of motion in all directions—very similar to universal joint action—and providing positive correction of misalignment.

Shafers are also adjustable for wear, and having proven their superiority in road and breakdown tests merit consideration wherever a friction eliminant is used.

Send us your specifications—our engineering department will be glad to demonstrate in more detail.

SHAFER BEARING CORPORATION

4500 Ravenswood Ave., Chicago, Ill.

SHAFER
Roller Bearing

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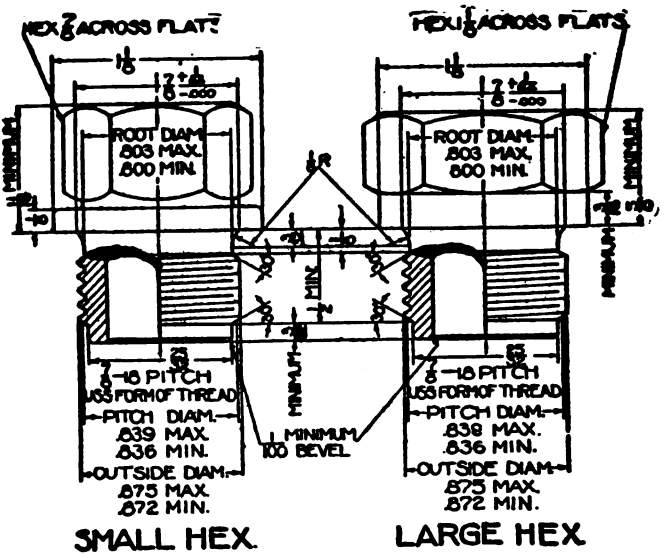
SPARK PLUG SHELL (*S. A. E. Standard*)



All dimensions below shoulder are identical for both spark plug shells.

If spark plug taps are made to dimensions shown in the accompanying table, the plugs can be turned in by hand, using a wrench only for final tightening.

THREAD FOR SPARK PLUG TERMINALS
NO. 8-32 (0.164 IN. DIA.) A. S. M. E. STANDARD

	Nominal Dimension	THREAD LIMITS	
		Spark Plug	Tap
Outside diameter.....	.875	.872 Min. .875 Max.	.877 Min. .879 Max.
Pitch diameter.....	.839	.836 Min. .839 Max.	841 Min. .843 Max.
Root diameter.....	.803	.800 Min. .803 Max.	.805 Min. .807 Max

Tap Drill Diameter
Nominal $\frac{13}{16}$ = .8125
.810 Min. .813 Max.

All dimensions in inches.

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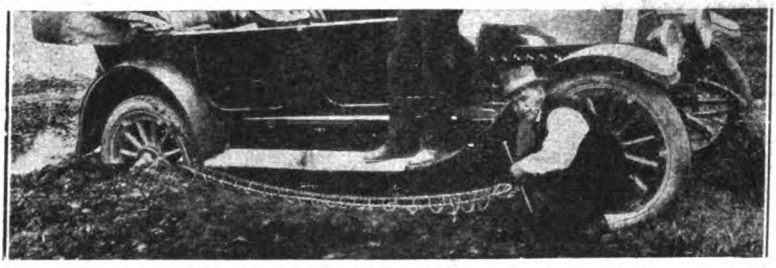
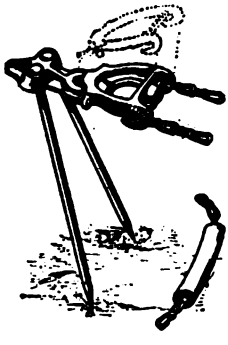


Stuck IN THE MUD?

Yes—but only for a minute if his dealer has sold him the most necessary Equipment a Motor Car can carry, namely,

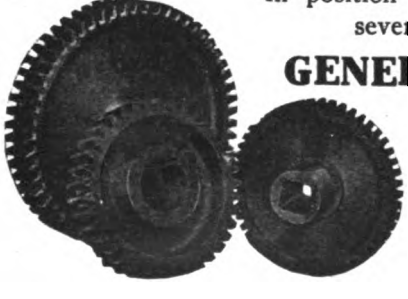
The Auto Chain Pull



A simple device that gives slipping wheels traction. When stuck in the mud, simply hook short link around felloe, attach to chain—then stretch chain out in the direction you wish to go. Next attach anchor plate to end of chain and drive down long anchor pins. Car will come out by winding chain on wheel and automatically unhook from anchor plate as wheel passes over it.

Big seller wherever shown. Write for Dealer's or Jobber's Proposition.

Robinson-Carter Company, 1711 Grand Ave. Kansas City, Mo.



In position to take on medium sized contracts of several high class Automobile Builders

GENERATED BEVEL GEARS

For Rear Axles or Differentials

SPUR GEARS

For Transmissions

WM. GANSCHOW COMPANY

1001-5 Washington Blvd. CHICAGO, ILL.

Manufacturers are requested to send us copies of all catalogues as soon as issued. This will assist us in listing your name in this Directory under the proper classification or classifications and will then be placed in our file for reference.

THE AUTOMOBILE TRADE DIRECTORY
243-249 West 39th Street, New York

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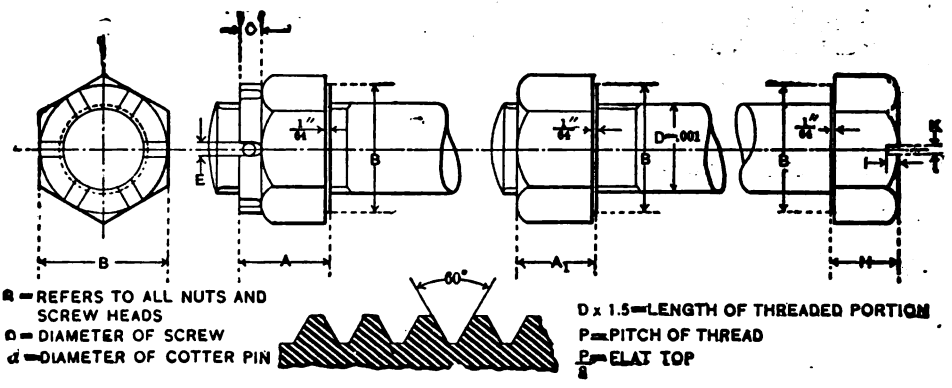
HEXAGON HEAD SCREWS, CASTLE AND PLAIN NUTS (*S. A. E. Standard*)

It is assumed that where screws are to be used in soft material, such as cast iron, brass, bronze or aluminum, the United States standard pitches will be used

DIMENSIONS



D	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2
P	28	24	24	20	20	18	18	16	16	14	14	12	12	12	12
A	9/32	21/64	13/32	29/64	9/16	39/64	23/32	49/64	13/16	29/32	1	1 5/32	1 1/4	1 13/32	1 1/2
A1	7/32	17/64	21/64	3/8	7/16	31/64	35/64	19/32	21/32	49/64	7/8	63/64	1 3/32	1 13/64	1 5/16
B	7/16	1/2	9/16	5/8	3/4	7/8	15/16	1	1 1/16	1 1/4	1 7/16	1 5/8	1 13/16	2	2 3/16
C	3/32	3/32	1/8	1/8	3/16	3/16	1/4	1/4	1/4	1/4	1/4	5/16	5/16	3/8	3/8
E	5/64	5/64	1/8	1/8	1/8	5/32	5/32	5/32	5/32	5/32	5/32	7/32	7/32	1/4	1/4
H	3/16	15/64	9/32	21/64	3/8	27/64	15/32	33/64	9/16	21/32	3/4	27/32	15/16	1 1/32	1 1/8
I	3/32	7/64	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8	7/32	7/32	1/4	1/4
K	1/16	1/16	3/32	3/32	3/32	3/32	3/32	3/32	3/32	3/32	3/32	5/32	5/32	3/16	3/16
d	1/16	1/16	3/32	3/32	3/32	1/8	1/8	1/8	1/8	1/8	1/8	11/64	11/64	13/64	13/64

Dimensions. All dimensions in inches.
Finish. All heads and nuts to be semi-finish.
Material. For all screws and nuts—steel.
Screws are to be left soft. Screw heads are to be left soft. The plain nuts are to be left soft. The Castle nuts are to be case-hardened.

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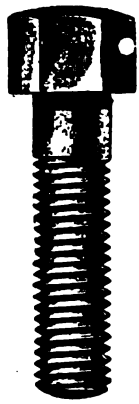
Hexagon Head Cap Screws

S. A. E. **U. S. S.** **HEAT TREATED**

MANUFACTURERS OF

U. S. S. and S. A. E. Standards-Hexagon Head Cap Screws. Basic Open Hearth Steel used.

Heads Forged and Trimmed—Bodies milled to size—Threads Cut—Product Heat Treated and Cleaned. Samples furnished for test purposes.



Mfgrs.

Muncie Cap and Set Screw Company

Muncie, Indiana

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LARGE DIAMETER THREAD (*S. A. E. Standard*)

Diameter, Inches	Pitch		Diameter, Inches	Pitch	
	Coarse	Fine		Coarse	Fine
1⅝	12	16	3⅞	10	16
1¾	12	16	4	10	16
1⅞	12	16	4⅛	10	16
2	12	16	4¼	10	16
2⅛	12	16	4⅜	10	16
2¼	12	16	4½	10	16
2⅜	12	16	4⅝	10	16
2½	12	16	4¾	10	16
2⅝	12	16	4⅞	10	16
2¾	12	16	5	10	16
2⅞	12	16	5⅛	10	16
3	10	16	5¼	10	16
3⅛	10	16	5⅜	10	16
3¼	10	16	5½	10	16
3⅜	10	16	5⅝	10	16
3½	10	16	5¾	10	16
3⅝	10	16	5⅞	10	16
3¾	10	16	6 & over	8	16

All threads to be U. S. S. form.

Useful Functions of π

The numerical values of the most frequently occurring combinations of π are given in the following table:

$\pi = 3.14159265$	$\frac{\pi}{7} = 0.44879895$	$\pi^2 = 9.86960440$	$\sqrt{\pi} = 1.77245385$
$\frac{\pi}{2} = 1.57079633$	$\frac{\pi}{16} = 0.19634954$	$\pi^3 = 31.00627668$	$\sqrt[3]{\pi} = 1.46459189$
$\frac{\pi}{3} = 1.04719755$	$\frac{\pi}{24} = 0.13089969$	$\frac{1}{\pi} = 0.31830989$	$\frac{1}{\sqrt{\pi}} = 0.56418958$
$\frac{\pi}{4} = 0.78539816$	$\frac{\pi}{32} = 0.09817477$	$\frac{1}{\pi^2} = 0.10132118$	$\frac{1}{\sqrt[3]{\pi}} = 0.68278406$
$\frac{\pi}{6} = 0.52359878$	$\frac{\pi}{180} = 0.01754329$	$\frac{1}{\pi^3} = 0.03225153$	$\text{Log } \pi = 0.49714987$

Gasoline of 64° Beaumé has a specific gravity of .72, and consequently weighs 5.96 pounds per gallon.

A British Thermal Unit represents the amount of heat required to raise the temperature of one pound of water one degree Fahrenheit at or near 39° F. Its symbol is B. T. U.

There are 778 foot-pounds in a B. T. U. and 42.4 B. T. U. to a horsepower.

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NATIONAL AUTOMOBILE AND ALLIED ORGANIZATIONS

National Automobile Chamber of Commerce, Inc.

Madison Ave. at 46th St., New York, N. Y.

Objects: To foster the interests of those engaged in the trade or business of manufacturing automobiles and all other self-propelling vehicles.

To reform abuses relative thereto.

To secure freedom of its members from unjust or unlawful exactions.

To diffuse accurate and reliable information as to the standing of merchants and others dealing with members as to all inventions, patents, processes or devices designed or intended for use in, upon, or in connection with such vehicles and the manufacture thereof, as to the state of the art relative thereto, and as to the condition and development of the trade in which the members are engaged, in the United States and foreign countries.

To procure uniformity and certainty in the customs and usages of such trade.

To promote the construction of better highways.

To advocate the enactment of just and equitable laws affecting members.

To settle differences between members.

To promote a more enlarged and friendly intercourse among business men engaged in such trade or dealing with persons engaged therein.

To acquire by grant, gift, purchase, devise or bequest, to hold and to dispose of such property as the purposes of the corporation shall require, subject to such limitations as may be prescribed by law, including inventions, letters patent and processes, or rights thereunder, for the benefit of its members and not for pecuniary profit.

Officers

President, Charles Clifton
Vice-President, R. D. Chapin
Second Vice-Presidents:
C. C. Hanch, Gasoline Passenger Car Division
Windsor T. White, Commercial Vehicle Division
Secretary, A. J. Brosseau
Treasurer, H. H. Rice
Gen. Manager, Alfred Reeves

Show Manager, S. A. Miles

Society of Automotive Engineers, Inc.

29 W. 39th St., New York, N. Y.

Object: To promote the arts and sciences connected with engineering and mechanical construction of automotive apparatus.

Officers

President, David Beecroft
First Vice-President, H. L. Horning
Second Vice-President, B. B. Bachman
Second Vice-President, E. A. Johnston
Second Vice-President, H. M. Crane
Second Vice-President, Jos. Van Blerck
Second Vice-President, T. C. Menges
Treasurer, C. B. Whittelsey
Secretary and General Manager, Coker F. Clarkson

Automotive Equipment Association

1813-1818 City Hall Square Bldg., Chicago, Ill.

William M. Webster, Commissioner
President, R. A. Stranahan, Ohio
Vice-President, H. M. Dine, Ohio
Chairman of the Board of Directors, J. Ernest Miller, Montreal, Canada

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The Motor and Accessory Manufacturers Association

33 West 42d St., New York, N. Y.

Objects: To promote in all lawful ways the interests of makers of motors, motor parts, and accessories.
To aid in the protection of its members.
To secure the advantages to be obtained by mutual co-operation.
To safeguard the interests of its members whenever possible and to diffuse information concerning trade credits, and other matters of interest to the members of the Association.
To co-operate with similar associations in other states.

Officers

President, C. E. Thompson
First Vice-President, E. H. Broadwell
Second Vice-President, Christian Gi l
Third Vice-President, W. O. Rutherford
Treasurer, L. M. Wainwright
Secretary and Asst. Treasurer, G. Brewer Griffin
General Manager, M. L. Heminway

American Automobile Association

501 Fifth Ave., New York, N. Y.; Albee Bldg., Washington, D. C.

Objects: To unite in one body all the automobile associations and individual motorists of the country; to secure reasonable and just legislation.
To aid in proper enforcement of automobile laws and ordinances; to advocate and obtain local, State and Federal aid in the construction and maintenance of good roads.
To encourage touring, and to secure, prepare, and disseminate information relative thereto; and
To support sportsmanlike contests and other movements that will advance motoring interests.

Officers

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Vice-Presidents:
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P. J. Walker
H. J. Clark
Mrs. Robt. Lee Morrell
Clifford Ireland
George H. Kile
Dr. R. R. Elmore
Preston Belvin
Treasurer, H. A. Bonnell
Secretary, John N. Brooks

Chairmen of Boards:

A. G. Batchelder, Executive Board.
Carl G. Fisher, Touring Board.
George C. Diehl, Good Roads Board.
Richard Kennerdell, Contest Board.
Percy E. Towne, Legislative Board.

The Rubber Association of America, Inc.

52 Vanderbilt Avenue, New York, N. Y.

Objects: To promote in all lawful ways the commercial interests of its members and to secure the advantages to be obtained by mutual co-operation.
To acquire and disseminate information concerning trade conditions at home and abroad, credits and other matters of interest.
To stimulate social intercourse among those connected with the rubber industry and commerce.
In general to promote the welfare of the rubber industry.

Officers

President, Homer E. Sawyer
First Vice-President, Harry T. Dunn
Second Vice-President, Frank A. Seiberling
General Manager and Secretary, A. L. Viles
Treasurer, Wm. C. Cox

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Motor Truck Association of America, Inc.

144 W. 65th St., New York, N. Y.

Objects: To encourage the efficient use of auto trucks and protect users against unjust taxes or unreasonable restrictions of any character.

To serve as a basis for a strong national organization of those interested in the commercial use of motor trucks and within our present membership district.

Officers

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Vice-Presidents—Hermann Irion
Charles M. Geiger
John W. Wierk
Secretary, Joseph Husson
Treasurer, Nat Mallouf

Directors

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W. H. Moore
J. B. Dolan
J. K. Orr
J. C. Williams

General Manager, T. D. Pratt
Counsel, Coulter & Bond

Manufacturers Aircraft Association, Inc.

501 Fifth Ave., New York, N. Y.

President, Albert H. Flint
Vice-President, J. K. Robinson, Jr.
Secretary, Frank H. Russell
Treasurer, F. B. Rentschler
General Manager and Assistant Treasurer, Samuel S. Bradley

National Automobile Dealers Association

St. Louis, Mo.

President, H. B. Haper, Philadelphia, Pa.
First Vice-President, P. H. Greer, Los Angeles, Cal.
Second Vice-President, J. Brace, Kansas City, Mo.
Treasurer, F. W. A. Vesper, St. Louis, Mo.
Secretary-General Manager, Harry G. Moock, St. Louis, Mo.
General Counsel, V. A. Vane, St. Louis, Mo.

Trailer Manufacturers Association of America

Grand Central Palace, New York City

Objects—To promote the trailer industry; encourage introduction and use of trailers and their accessories; further construction and maintenance of good roads; aid in securing enactment of uniform laws relating to use of trailers; and to gather and disseminate information regarding the trailer industry, the use of trailers, the construction of roads and the enactment of uniform laws.

Officers

President, J. H. Fertig, Newark, N. Y.
1st Vice-President, H. C. Fruehauf, Detroit, Mich.
2d Vice-President, C. H. Martin, Springfield, Mass.
Secretary-Treasurer, J. C. Endebrock, Cincinnati, Ohio
General Manager, H. W. Perry, New York City

Executive Committee

J. H. Fertig, Newark, N. Y.
H. C. Fruehauf, Detroit, Mich.
C. H. Martin, Springfield, Mass.
J. C. Endebrock, Cincinnati, Ohio
W. E. Ferris, Cleveland, Ohio
S. A. Griggs, Detroit, Mich.
Ike S. Byrum, Troy, Ohio

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The JAFFE Radiator

"COOLS FORDS"

Below Zero!

A Ford standing in the snow at the curb. The driver comes out—starts his motor.

In ten minutes the radiator sends forth a cloud of steam. Tiny streams of water flow from half a dozen bursted tubes of the frozen radiator.

Then a tow to the garage—and repair bills.

The Jaffe Not Injured by Freezing

All that trouble would have been avoided if the owner of the Ford had equipped his car with a Jaffe Radiator.

Neither freezing nor over-heating can injure the strongly constructed core of the Jaffe. The honeycomb walls are built of rolled brass, giving a resiliency which allows for expansion of ice or steam.

The Jaffe Radiator will not boil over. Two thousand hexagonal air cells give the flowing water a maximum amount of radiating surface. During the hottest months of summer the Jaffe maintains a cool, even temperature.

Withstands Shocks and Strains

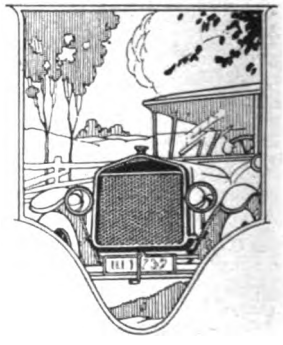
Vibration and severe strains cannot injure the Jaffe because of its flexibility and strong construction. The owner is protected by a complete guarantee covering defects resulting from faulty materials or workmanship.

Stop Worrying About Your Radiator

With a Jaffe, winter worries are ended. If a Ford is parked outside in zero weather by a careless driver, the radiator cannot be injured by freezing. And back of this claim is a POSITIVE, WRITTEN GUARANTEE.

"Unharmed by winter's blasts"

"Cool while summer lasts"



SEE YOUR JOBBER

or write to

JAFFE RADIATOR COMPANY

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MACHINE BRONZE

(CORED AND SOLID BRONZE BARS)

WOULDN'T it be nice if you could buy your bearings from stock just as you would a pound of sugar or a box of cigars?

You can.

Machine Bronze, the wear-resisting bearing metal that is made in solid and cored bars 12" long and in 254 different sizes, is handled by dealers everywhere.

It is the long-lived bearing that is absolutely guaranteed against defects of any kind.

Made by specialists and sold on honor. You'll make no mistake when you specify Machine Bronze.

DISTRICT DEALERS:

Detroit	The T. B. Rayl Co.
Boston	Chandler & Farquhar Co.
Pittsburgh	Pittsburgh Supply Co.
Buffalo	Beals, McCarthy & Rogers, Inc.
Chicago	The Machinists Supply Co.
New York	Manning, Maxwell & Moore, Inc.
Kansas City	Richards & Conover Hardware Co.
St. Louis	Beck & Corbitt Iron Co.
Louisville	Neill-LaVielle Supply Co.
Milwaukee	Ph. Gross Hardware & Supply Co.
Richmond	Smith-Courtney Co.
Spokane	Washington Machinery & Supply Co.
Cincinnati	The E. A. Kinsey Co.
Baltimore	Carey Machinery & Supply Co.
Philadelphia	Sherritt & Stoer Co., Inc.
Providence	Belcher & Loomis Hardware Co.
Holyoke	J. H. Russell Co.
Atlanta	Beck & Gregg Hardware Co.
Atlanta	Pasco Tool Co.
Grand Rapids	McMullen Machinery Co.
Rochester	Homer Strong.
Olean	Luther Manufacturing Co.
Cleveland	The Cleveland Tool & Supply Co.

LUMEN BEARING COMPANY · BUFFALO

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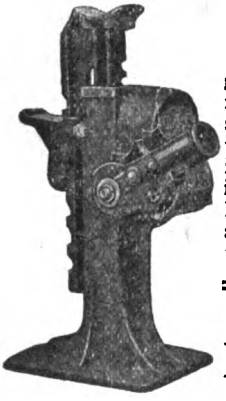
DUFF GENUINE BARRETT JACKS

A Moderate-Priced Automobile Jack

This jack meets, at a very moderate price, all requirements as to lifting capacity and different axle heights of the great majority of passenger cars and light commercial motor vehicles. The footlift is of the quickly adjustable, sliding type, instantly set at any height on the rack to fit under car axle, and reserving the entire "raise" of the lifting rack for actual lifting of the car above the ground. Jack is guaranteed to lift 2000 lbs. on the head and 1000 lbs. on the footlift. **Furnished** with 18-in. steel handle.

Jack No.	Capacity	Height Inches	Raise Inches	Foot Lift Adjustment		Weight with Lever	List Price
				Lowest	Highest		
08	1 ton	11¼	6½	4 in.	10½ in.	9 lbs.	$5.50



"The Aristocrat of Auto Jacks"

An easily operated jack for lifting the heaviest passenger cars. Operating handle is twice as long as the ordinary jack handle. The long handle easily clears all obstructions at either the front or rear of the car, and may be used to place the jack in position or remove it. When not in use, the handle uncouples to half its length, easily fitting into the smallest tool box. By means of an adjustable foot lift, the jack can be made instantly to fit under the lower axle of any car. The range of adjustment is wide enough to handle any car in any position.

Jack No.	Capacity in tons	Height Inches	Raise Inches	Weight with Lever	Foot Lift Adjustment		List Price
					Lowest	Highest	
411	1½	11	7	20 lbs.	4 in.	10 in.	$15.00

Sturdy Motor Truck Jacks

The leverage in these jacks is so compounded by gears that the load is lifted with only one-third the effort required with a direct leverage jack. Furnished as standard equipment by many of the leading truck manufacturers. Recommended for constant service in garages where a heavily built jack is needed to stand the heavy wear that a garage jack is subjected to. Each jack is tested before shipment.

Jack No.	Capacity Tons	Height Inches	Raise Inches	Weight with Lever	Code Word
100	3	10¾	5¼	16 lbs.	Comet
200	5	13	6¼	28 lbs.	Autojax
207	5	12¼	5½	22 lbs.	Meteor
205	10	16	5¾	43 lbs.	Motrux

THE DUFF MANUFACTURING CO.

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Monadnock Bldg., SAN FRANCISCO, CAL.

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Fe 3'21 S Serial Cat.

Bearings and Oil Mileage

IT takes hours of expensive labor to first get at and then to take up or replace worn bearings or bushings. A few cents in parts costs "saved" by the car builder compels the owner to pay many dollars in repair labor and unnecessary maintenance costs.

> **"Excessive oil consumption spells worn bearings, for loose bearings burn more oil—sometimes even pump oil from crank case to clutch housing."**
>
> ***—Second Hand Car Tips***

Designers of the Locomobile, Mercer, Stevens Duryea, Lafayette, Oldsmobile, Stutz, Haynes, Chandler, Kissel and many other cars, know this and use Non-Gran Bronze. These men have learned to judge a bearing bronze not only by its chemical analysis but by micro-photographic scrutiny of the alloy's actual molecular structure. Non-Gran is identified to them by the toughest, densest structure that is offered for laboratory examination. Experience has proven these qualities are uniformly maintained.

Non-Gran is alloyed of new metals—not remelted scrap. It is uniform physically as well as chemically—free from flaws, sand holes, air or gas pockets—a bearing bronze which can always be depended upon.

Write for the Non-Gran booklets and a complete list of Non-Gran users who have found that Non-Gran has the knack of preventing the "knock." Address:

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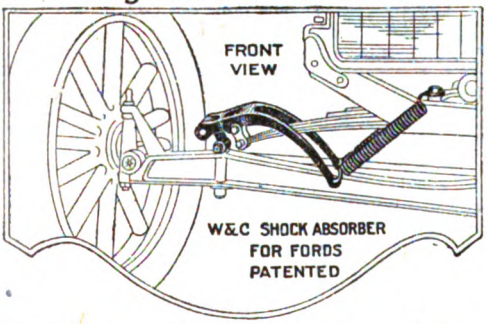
Factory Distributors of Automotive Equipment

"W & C"

The Original Double-Arm Shock Absorber for Ford Cars



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Double Arms—Malleable Castings—Milled Surfaces—Hard Oilers—Drilled Holes
Cold Rolled Steel Bolts—Bronze Bushings—Special Alloy Steel Springs
High Class Enameling

350,000 SATISFIED USERS

— ORDER FROM YOUR JOBBER —

Manufactured by the P. H. Webber Co., Hoopeston, Ill.

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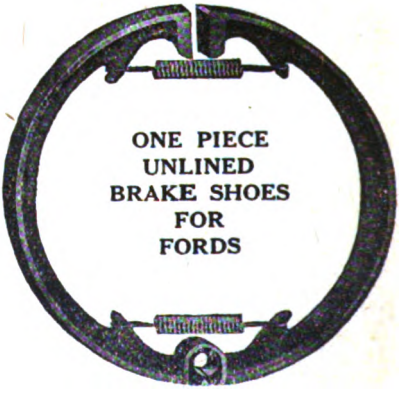
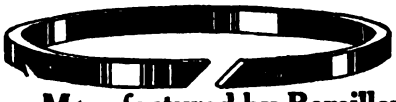
New Light Weight and Standard Weight for Fords

PISTON PIN BUSHINGS FOR FORDS

PISTONS COMPLETE WITH RINGS, PINS AND BUSHINGS



Piston Rings for Fords
Step Cut and Diagonal Cut



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